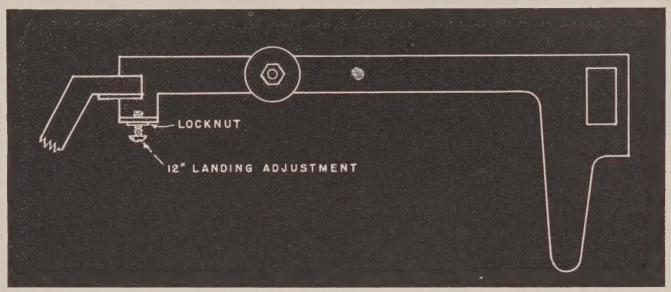
Simplified Repairing for Record Changers

Part I Explains Easy Servicing Procedure for Needle Landing Faults in Many Popular Makes

● Although most intermittent troubles in record changers are faults of the records, persistent difficulties due to wear and tear of ordinary service arise in many changers. Of these, one of the most common is improper needle landing.

At the commencement of a record changer's cycle, the tone arm or pickup moves into position and is lowered to land on the record's feed-in groove. Sometimes the tone arm lands at an incorrect point, or misses the record completely. Known as improper needle landing, this may have any of several causes.



The 12" Capehart adjustment is made on a lever arm under the motorboard, after the 10" setting.

Why They Go Wrong

At one extreme is the simple case in which someone has moved the shielded pickup lead wires in such a manner as to put a strain on the tone arm, preventing it from moving freely. An immediate "repair" is made by redressing the leads at the base of the pickup.

At the other extreme are those cases in which the needle landing requires adjustment for no particularly apparent reason. Even after weeding out the occasional complaints which have their origin in variations of record diameters, a great number remain which can be explained only by the gradual and imperceptible wear on certain parts such as the pickup's shock mounting within the tone arm or the slipping of a set-screw adjustment.

When a changer has been used for a great deal of manual operation, play may develop at the point where the pickup arm is hinged to its shaft. This side-to-side leeway causes erratic tone arm set-down action. Tightening the mechanism at this point may in turn require resetting of the needle landing action.

Check Other Actions

Once the tone arm has lowered on to the face of the record, other factors may cause trouble mistakenly identified with needle landing. Little difficulty along this line is encountered when the changer is playing modern records with the spiral feed-in groove, provided the needle is in good condition.

If the needle is dull, however, the pickup arm may skid across the face of the record, or fall off the edge. The reason for this is simple to explain. Most modern changers have a whisker spring which bears against the tone arm shaft. Its purpose is to give the pickup a boost into the first record groove, after the needle landing is completed.

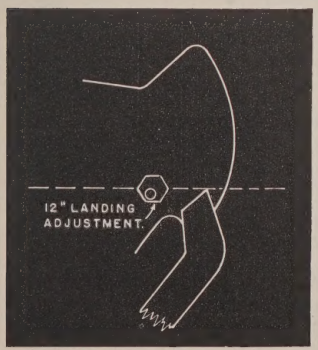
How to Trim Whiskers

If this whisker spring develops too much tension, the tone arm will jump over the first grooves into the playing portion of the record. Normal fatiguing of the spring, on the other hand, may cause a loss of tension, with the result that the tone arm does not enter the grooves at all, or slides back off the record.

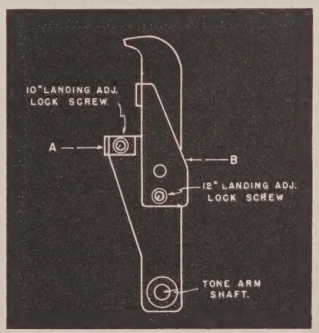
This, to repeat, is not a needle landing fault. The remedy is to adjust the spring tension by flexing, or to replace it. Older type changers with no whisker spring may require that the turntable motorboard be tilted in such a direction as to assist the pickup in entering the grooves.

In the last five years much attention has been given to the bent-shank type of needle. Owners of changers have purchased these needles, and subsequently some have had difficulty with improper start of play action. The increase in distance from the tone arm pivot to the needle tip, due to the bent-shank needle, is in some cases sufficient to cause the pickup to miss the record, or balance precari-

The 12" adjustment of most RCA changers is made by rotating the hexagonal stud located on the cam-shaped plate. It is important to keep the heavy part of the stud to the rear of the unit, to prevent interference with the 10" action.



On Seeburgs, loosen 10" screw A, slide stop against striker plate, retighten. Set 12" with B.



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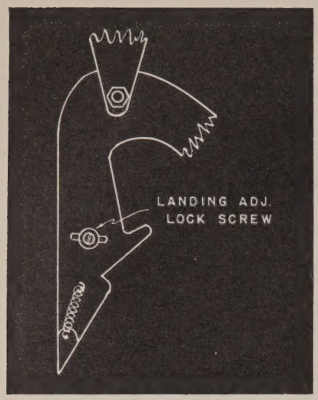


Raise tone arm of Zenith models to remove lift pin, before loosening lock screw.

ously on its edge. A readjustment of the needle landing point will cure this trouble, too.

It is virtually certain that after the principal cause of improper needle landing is discovered and remedied, it will be necessary to make a final readjustment. Listed in the table, are some of the most popular changers, with an outline of the procedure for making the adjustments.

Before any adjustment is attempted, the servicer should study the operation of the parts of the changer involved in moving the tone arm. Too many actions must not be observed at once. This attitude of concentration is, of course, as basic as the similar, standard procedure used in radio circuit troubleshooting.

In studying the mechanical action of a changer, the servicer should be careful to mount it in its normal operating position, for many of its parts are gravity operated, or adjusted with the force of gravity taken into consideration. Several manufacturers produce mountings upon which a changer may be serviced in its normal position. General Cement Mfg. Co. of Rockford, Ill., and the Hollander Radio Supply Co., 549 W. Randolph St., Chicago, Ill., are examples. Some servicers use the expedient of an ordinary stool turned upside down, for changers whose normal position is horizontal.

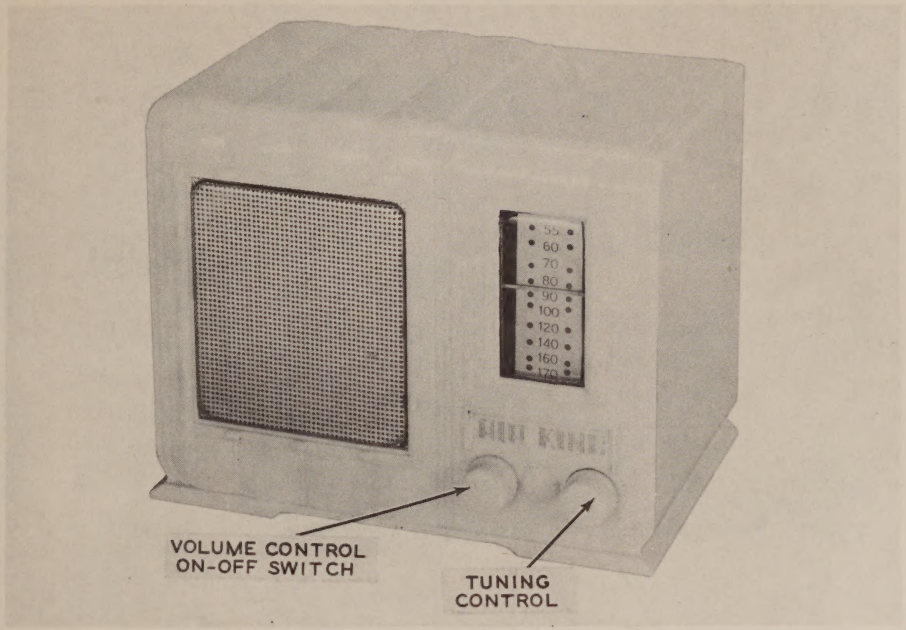
There are three general types of adjusting mechanisms. First, are those which require loosening of the tone arm or the crank on the tone arm shaft, for repositioning of the arm. Second, are those which are adjusted by the rotation of eccentric studs which determine the distance between critically-dimensioned parts. Third, are those adjustments which, made by means of shoe-type stop plates or projecting screws, serve the same purpose as the second group. The type and location of these adjustments on various changers may be found from the table.

In general, adjustments are made for 10″ records first. If a separate 12″ adjustment is provided, it should be made second. When making adjustments, cycle the changer by hand until the pickup has almost lowered the needle to the record, without quite touching it. Then make the adjustment, and try the result with power on. Several different records must be tried after the adjustment has been locked down tight.

(1)—Regardless of record size on changer, adjust the screw which is to right of center column of record clip support. Make the 10″ adjustment first. (2)—Adjust the front screw for 10″ records, and the rear screw for 12″ discs. (3)—The illustration on the Zenith adjustment applies to the V-M changer as well.

MAKE	MODEL	TYPE of ADJUSTMENT: Separate 10″ & 12″ positioning screws	Common 10″ & 12″ positioning screw	Separate 10″ & 12″ rotating studs	Separate 12″ rotating stud	Separate 12″ positioning screw	Common 10″ & 12″ tone arm rotation on shaft or crank	Separate 10″ tone arm rotation on shaft or crank	Separate 10″ & 12″ positioning stop on striking plates	LOCATION of ADJUSTMENT: Through Motor Board: Left of tone arm	Front of tone arm	Right of tone arm	In line with spindle & arm	Above Motor Board: Base of pickup on shaft	Side or top of tone arm	Under cover of record stack holder	Below motorboard on crank of tone arm shaft	See illustration or numbered note
Admiral	RC-150	●														●		(1)
	RC-160		●													●		
Capehart	P1, 2, 3, 4					●		●										●
Continental	RC50, 51, 52, 53						●										●	
Detrola	N-100, 200						●							●				
Emerson	819003						●										●	
Federal	306						●							●				
Galvin	B2RC, B3RC, B4RC						●										●	
Garrard	RC1A, 2A						●								●			
	RC4, 5, 6, 8		●							●								
	RC10, 11, 30, 31, 40, 41		●								●							
	RC50, 50C, 50X, 51, 51C, 51X		●							●								
General Electric	F100, FE119, FES119						●								●			
	LRP158, 160, 162						●										●	
General Industries	Spec. #T-18J967-4		●								●							
	K, L, 17						●								●			
	101, 102		●									●						
	C120, 120L, 125, 125L; RC130, 130L						●							●				
General Instrument	201, 202, 203						●										●	
Magnavox	RC4, 5, 6, 8		●							●								
	RC10, 11, 30, 31, 40, 41		●								●							
	RC50, 50C, 50X, 51, 51C, 51X		●							●								
	M61, 71			●							●							(2)
New Products Corp.	220, 221, 223, 320, 321, 323						●										●	
Oak Mfg. Co.			●										●					
Philco	HR1, 35-1108, 1169						●								●			
	35-1180, 1231, 1233		●								●							
	35-1234, 1236			●							●							
	35-1239, 1241, 1259, 1261, 1266, 1268, 1269, 1270, 1271, 1276, 1279, 1285, 1286, 1289		●								●							
	35-1293						●										●	
RCA	RP-139A, 139B, 140, 145, 145E, 152, 152A, B, C, D, J, 153, 155				●			●									●	●
	RP158, 160, 162						●										●	
	MI-4831 Portable				●			●										●
Radio Products Corp.	RC50, 51, 52, 53						●										●	
	B, BR, C						●										●	
Seeburg	J Series Early J " Late J " Std. Late J " Non-Std. Late JM " Std. Late JM " Non-Std. Late JR " Early JR " Std. Late								●									●
V-M	200-B						●										●	(3)
Webster	11, 21, AC-21, AC-DC 21J, 22, 23, 24, 25		●								●							
	40, 41			●							●							(2)
	50, 56						●								●			
	210		●								●							
Zenith	3-11680, 11468		●															●

AIR KING
MODELS 4607, 4608



AIR KING
MODELS 4607, 4608

AIR KING MODEL 4608

TRADE NAME	Air King Models 4607, 4608
MANUFACTURER	Air King Products Co., Inc., 1523 63rd Street, Brooklyn 19, N.Y.
TYPE SET	AC - DC Superheterodyne
TUBES (FIVE)	Types, 14Q7 Converter, 7B7 IF Amp., 14B6 Det.-AVC-AF, 50L6GT Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-125 Volts AC-DC Rating .225 Amps. @ 117 V AC
TUNING RANGE—BROADCAST	540-1720KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 14Q7. Low side to chassis.	455KC	Point of no interfering signal.	Across voice coil	A1,A2 A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolation capacitor in series with ground lead and decrease dummy antenna to .001 MFD to prevent excessive hum modulation.
200 MMFD	High side to ant. lead. Low side to B-.	1600KC	1600KC	"	A5	Adjust for maximum output. Use isolation transformer or capacitor in ground lead.
"	"	1400KC	1400KC	"	A6	"

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	7B7	7B7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	2068-C	┌2N511	DSB-2x40-150/	TA-440	┌FRS150-40-40	BRD4415	Filter - Red
B	40	150			40-25				" - Blue
C	25	25		└TC26		TA-25	└FRS25-25	BR252A	" - Yellow
7	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8A	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass*
B	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	" " " †
9	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
10	.002	600		TP405	S-6-002	TC-22	684-.002	DT6D2	" " "
11	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S2	RF Bypass Pwr. Supp.
12	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S2	AVC Filter
13	.005	600		TP408	S-6-005	TC-25	684-.005	DT6D5	Ant. Coupling
14A	470	500		MC245	M0.5-35	1FM-35	1468-.0005	SW5T5	Audio Plate Bypass†
B	220	500		MC240	M0.5-325	1FM-325	1468-.00025	SW5T25	" " " " *
15	220	500		MC240	M0.5-325	1FM-325	1468-.00025	SW5T25	RF Bypass Vol. Cont.
16	47	500		MC225	M0.5-45	1FM-45	1468-.00005	SW5Q5	Osc. Grid Cap.

† Used in initial production
* Used in later models

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	2467	MR46	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		"	M26	41	SW-A	" " " " "

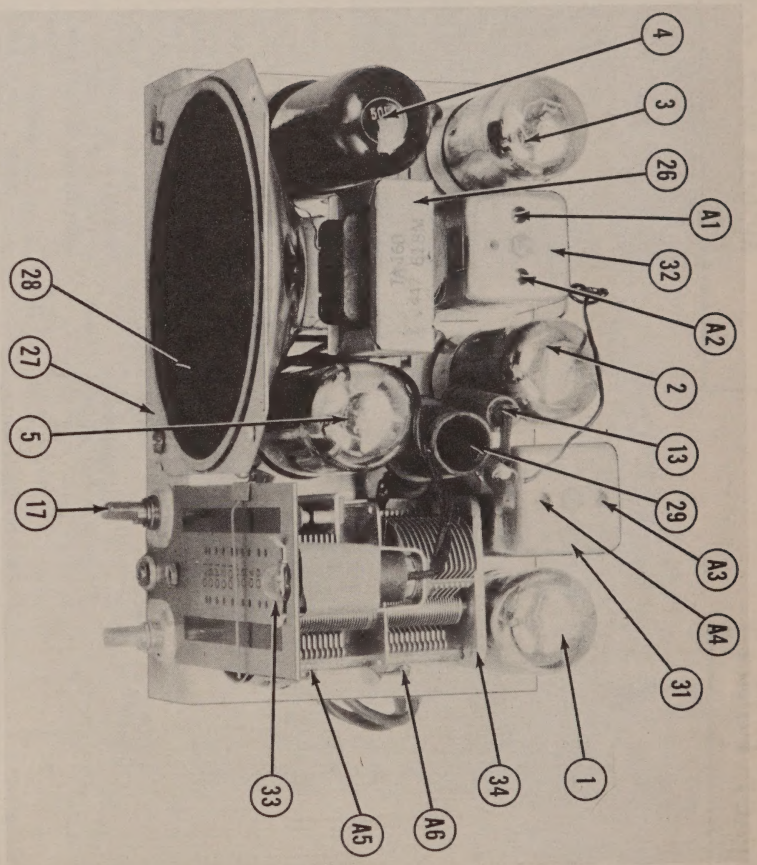
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	IRC PART No.	IDENTIFICATION CODES
18	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
21	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st AF Plate Load
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
23	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
24	2200Ω	2		BT-2-2200	Red-Red-Red Filter
25	22Ω	1		BW-1-22	Red-Red-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	STANCOR PART No.	THORDAR'N PART No.	UTAH PART No.	INSTALLATION NOTES
26	2000Ω	2.9Ω	144Ω	.54Ω	Part of 5867	A-3673‡	T-14882‡		‡Bend mounting tabs down, file slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIR KING PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
27	PM	2.5Ω	5867	ST-113		
	CONE DIA.	VC DIA.				
28	3-15/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

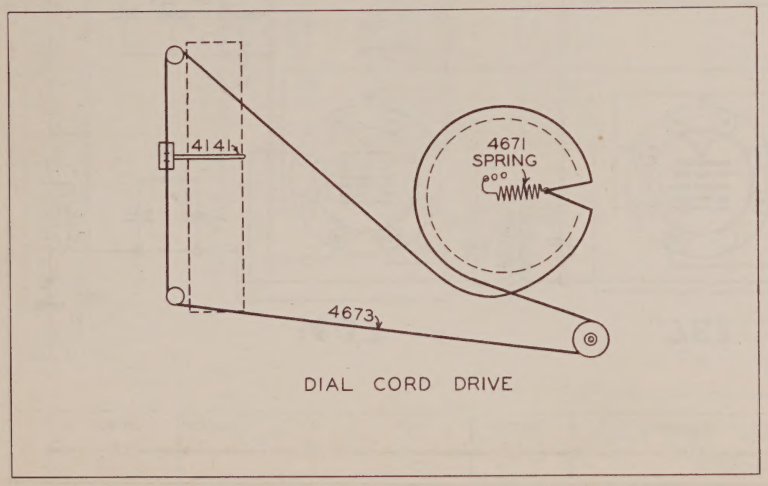
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	MEISSNER PART No.	INSTALLATION NOTES
29	Ant. Coil	60Ω	5Ω			
30	Osc. Coil		4.5Ω			
31	Input IF	11.5Ω	13Ω	3364-A	16-6666	
32	Output IF	11.5Ω	11.5Ω	3365-A	16-6667	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIR KING PART No.		INSTALLATION NOTES
33	Bayonet	6-8	0.15	brown	4925		Type 47

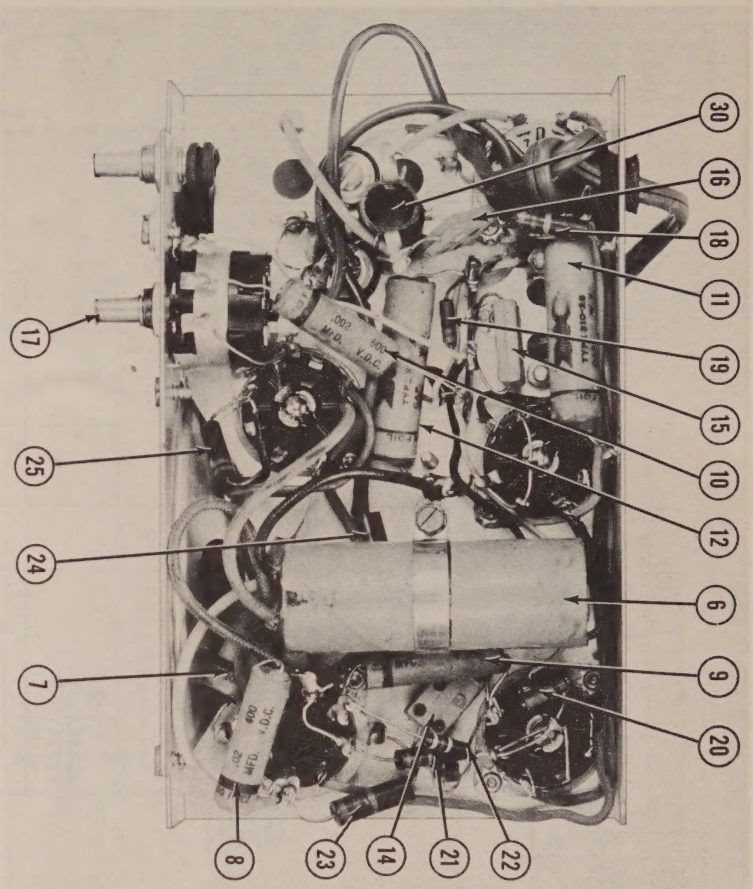
MISCELLANEOUS

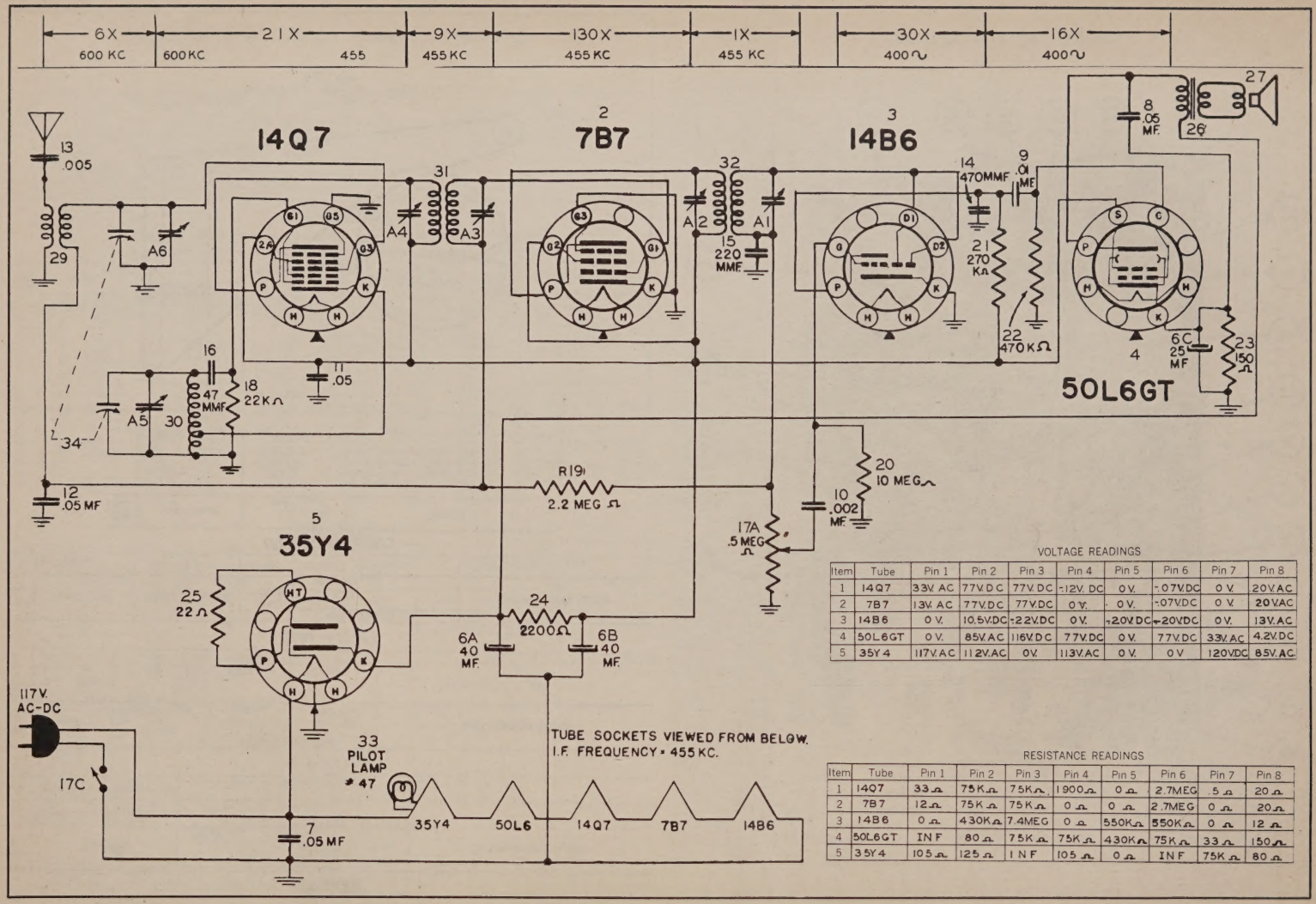
ITEM No.	PART NAME	AIR KING PART No.	NOTES
34	Tuning Cap.	1682-D	2 Gang Variable Cap.
	Cabinet	6001	Walnut or Ivory
	Knobs	39128	Volume and Tuning
	Dial	40110-A	Calibration and Plate
	Antenna Hank	5580-A	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	33V. AC	77V.DC	77V.DC	-12V. DC	0V.	-.07V.DC	0 V.	20V.AC
2	7B7	13V. AC	77V.DC	77V.DC	0 V.	0 V.	-.07V.DC	0 V.	20V.AC
3	14B6	0 V.	10.5V.DC	-2.2V.DC	0 V.	-20V.DC	-20V.DC	0 V.	13V.AC
4	50L6GT	0 V.	85V.AC	116V.DC	77V.DC	0 V.	77V.DC	33V.AC	4.2V.DC
5	35Y4	117V.AC	112V.AC	0V.	113V.AC	0 V.	0 V	120VDC	85V.AC

RESISTANCE READINGS

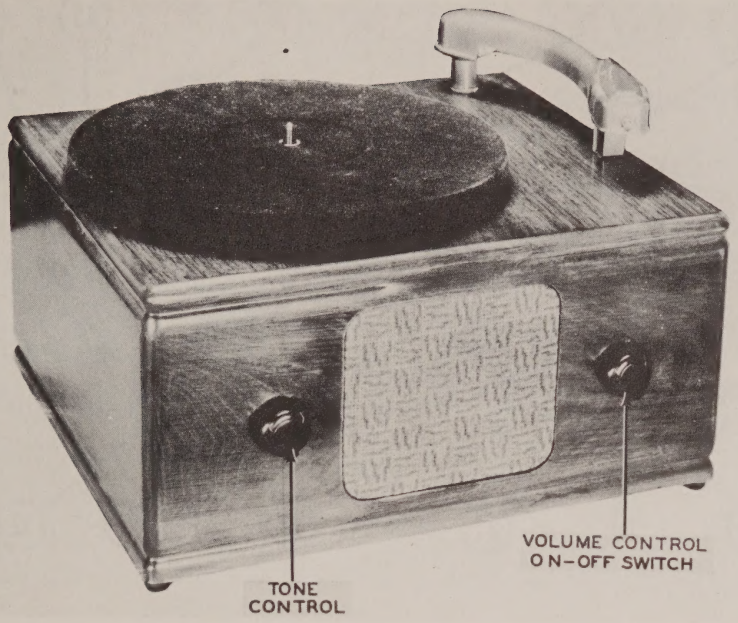
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1407	33Ω	75KΩ	75KΩ	1900Ω	0Ω	2.7MEG	5Ω	20Ω
2	7B7	12Ω	75KΩ	75KΩ	0Ω	0Ω	2.7MEG	0Ω	20Ω
3	14B6	0Ω	430KΩ	7.4MEG	0Ω	550KΩ	550KΩ	0Ω	12Ω
4	50L6GT	INF	80Ω	75KΩ	75KΩ	430KΩ	75KΩ	33Ω	150Ω
5	35Y4	105Ω	125Ω	INF	105Ω	0Ω	INF	75KΩ	80Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WATTERSON
MODELS PA-4585, APA-4587

WATTERSON
MODELS PA-4585, APA-4587



WATTERSON
MODELS PA-4585, APA-4587

WATTERSON MODEL PA-4585

TRADE NAME	Watterson Models PA-4585, APA-4587
MANUFACTURER	Watterson Radio Mfg. Corp., 2700 Swiss Ave., Dallas, Texas
TYPE SET	AC Record Player with 3 Tube Amplifier and Speaker
TUBES(THREE)	Types 12SK7GT Audio Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-115 Volt AC Rating .235 Amps. @ 117VAC
TUNING RANGE—BROADCAST	SHORT WAVE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	35Z5	0V.	99V.AC	0V.	117V.AC	117V.AC	125V.DC	63V.AC	132V.DC
2	50L6	0V.	63V.AC	116V.DC	108V.DC	0V.	0V.	11V.AC	7.7V.DC
3	12SK7	0V.	0V.	0V.	.6V.DC	.2V.DC	5.7V.DC	11V.AC	18V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	35Z5	0Ω	92Ω	INF	290Ω	290Ω	290KΩ	60Ω	290KΩ
2	50L6	0Ω	60Ω	290KΩ	290KΩ	.5MEG	0Ω	13Ω	145Ω
3	12SK7	0Ω	0Ω	0Ω	2.5MEG	1KΩ	2.6MEG	13Ω	750KΩ

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: WATTERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Audio Amp.	12SK7GT	12SK7GT	8N	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WATTERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4	30	150		TC47	M-30-150	UT-301	PRS150-30	BR3015	Filter
5	20	150	19W-5	TC45	M-20-150	UT-201	PRS150-20	BR2015	"
6	20	150		TC45	M-20-150	UT-201	PRS150-20	BR2015	"
7	20	25		TC26	M-25-25	TA-25	PRS25-25	BR202A	50L6 Cath. Bypass
8	.1	400	5W-13	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.01	400	5W-6	TP421	S-4-01	TC-11	484-.01	DT4S1	50L6 Plate Bypass
10	.006	400	5W-5	TP409	S-6-006	TC-26	484-.006	DT6D6	Audio Coupling
11	.05	400	5W-9	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Plate Decoup.
12	.002	400	5W-3	TP405	S-6-002	TC-22	484-.002	DT6D2	Tone Compensation
13	.003	400	5W-4	TP406	S-6-003	TC-23	484-.003	DT6D3	" "
14	.05	400	5W-9	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Screen Bypass
15	.01	400	5W-6	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling

CONTROLS

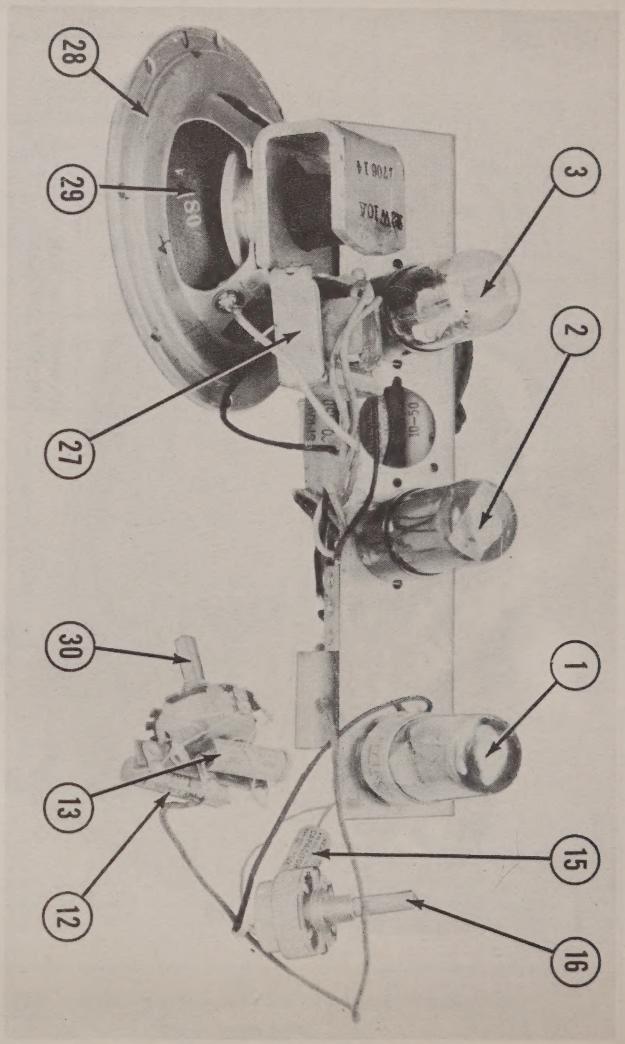
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WATTERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	1	13W-1	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	RS-2	Attach to 16A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WATTERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
17	2 Meg.	½	9W-8	BTS-2.2 Meg	Red-Blk.-Grn. 1st AF Grid
18	1000Ω	½		BTS-1000	Br.-Blk.-Red 1st AF Cathode
19	2 Meg.	½	9W-8	BTS-2.2 Meg	Red-Blk.-Grn. 1st AF Screen Dropping
20	200Ω	½	9W-5	BTS-220K	Red-Blk.-Yl. 1st AF Plate Load
21	200Ω	½	9W-5	BTS-220K	Red-Blk.-Yl. 1st AF Plate Filter
22	500KΩ	½	9W-3	BTS-470K	Grn.-Blk.-Yl. Output Grid
23	150Ω	½	9W-2	BW-½-150	Br.-Grn.-Br. Output Cathode
24	150Ω	½	9W-2	BW-½-150	Br.-Grn.-Br. Filter
25	40000Ω	½	9W-19	BTS-3900	Yl.-Blk.-Red Filter
26	135Ω	10	9W-51	ABA-150*	Line Dropping

*Adjust tap to 135Ω

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WATTERSON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
27	1558Ω	3.65Ω	186Ω	.86Ω	12W1	A-3676†	T-14S821		Bend mounting tabs down and mount on the original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WATTERSON PART No.	JENSEN PART No.		
28	FIELD PM	VC IMP. 3.35Ω	22W10	ST-106		
29	CONE DIA. 4-13/16"	VC DIA. 5/8"	CONE HAS SPECIAL ADJUSTABLE FEATURE-FOR REPLACEMENT ORDER FROM MANUFACTURER			

MISCELLANEOUS

ITEM No.	PART NAME	WATTERSON PART No.	NOTES
30	Tone Switch Phono. Motor Pickup	 21W7 21W5	Single Pole 3 Position

DISASSEMBLY PROCEDURE

1 - Remove tone control knob by loosening set screw.

2 - Remove volume control knob by loosening set screw.

3 - Remove back cover (4 cushioned pins).

4 - Unsolder the two phono-motor leads from chassis, one from ground strap of 3525 tube, one from the voltage dropping resistor.

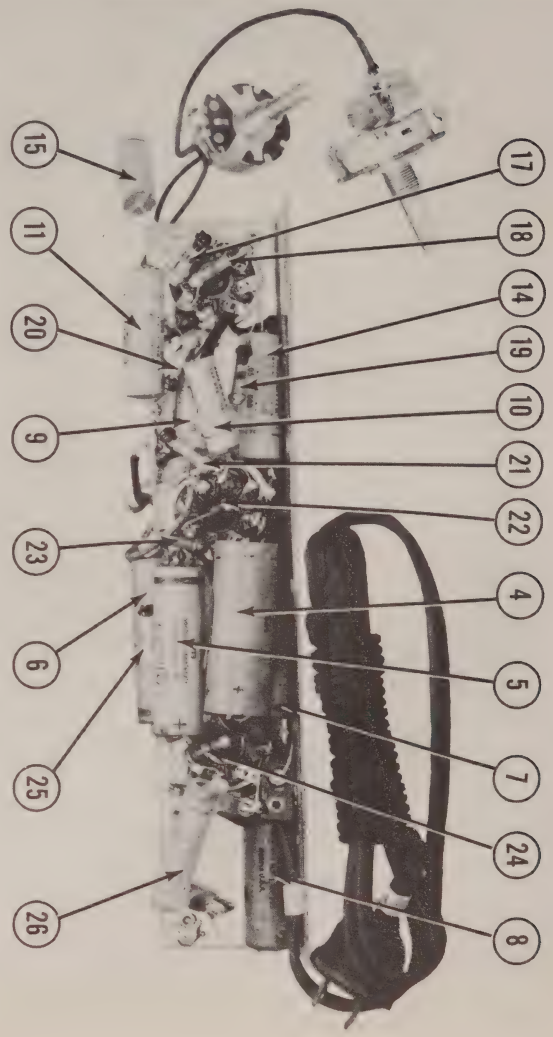
5 - Unsolder red and black pickup leads from volume control--black to ground.

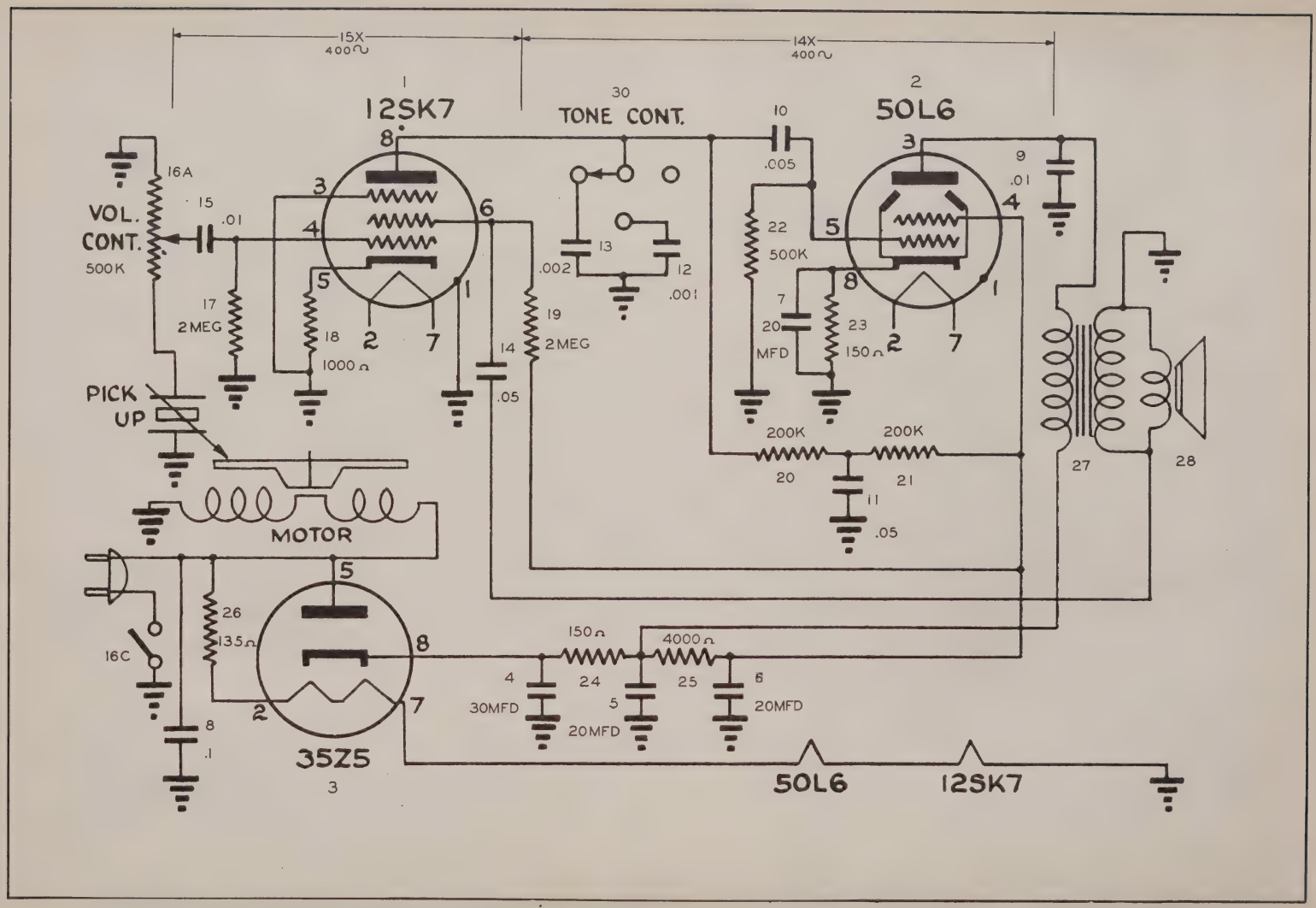
6 - Remove volume and tone control lock nuts.

7 - Remove two screws holding speaker, and remove speaker.

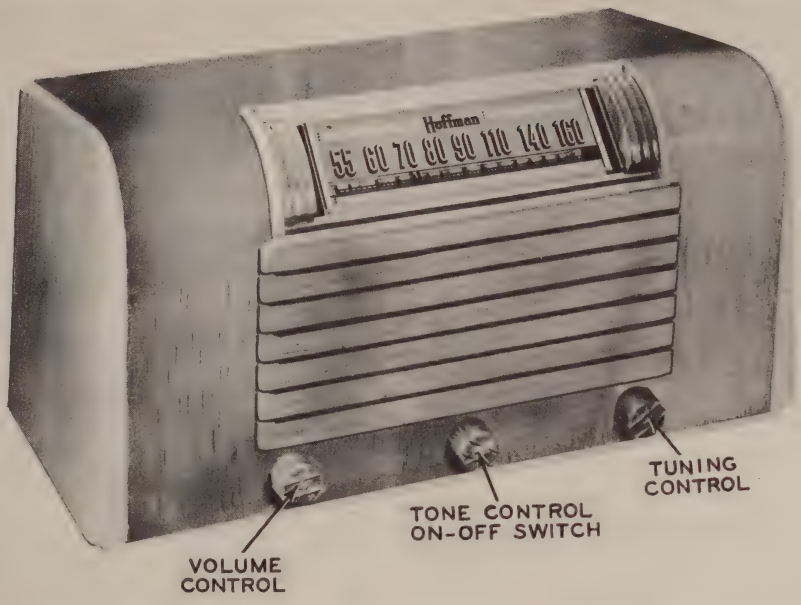
8 - Remove two screws holding chassis, and remove chassis.

CHASSIS—BOTTOM VIEW




15X
400Ω
14X
400Ω
1
12SK7
30
TONE CONT.
2
50L6
16A
VOL.
CONT.
500K
15
.01
17
2MEG
18
1000Ω
19
2MEG
14
.05
13
.002
12
.001
10
.005
22
500K
7
20
MFD
23
150Ω
9
.01
PICK
UP
MOTOR
200K
200K
20
21
11
.05
27
28
16C
26
135Ω
8
.1
35Z5
3
150Ω
4000Ω
4
30MFD
24
5
20MFD
25
6
20MFD
50L6
12SK7

HOFFMAN
MODEL A300



HOFFMAN
MODEL A300

HOFFMAN MODEL A300

TRADE NAME	Hoffman Model A300 (Chassis No. 100)
MANUFACTURER	Hoffman Radio Corp., 3430 South Hill Street, Los Angeles, California
TYPE SET	AC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 6SK7 RF Amp., 6SA7 Converter 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6K6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	115 Volts AC Rating .480 Amps. @ 117 V AC
TUNING RANGE—BROADCAST	535-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05	High side to pin #8 (grid of 6SA7. Low side to chassis.	455KC	Point of no interfering signal.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output.
"	"	1600KC	1600KC	"	A5	" " " "
200 MMFD	High side to ext. ant. Low side to chassis.	1400KC	Tune in 1400 KC signal.	"	A6, A7	" " " "

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOFFMAN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	20	450	4200	FP339	DY-2x20-450	EL-350	AF44J4A	UP6BJ38	■ Filter
(B)	20	450							▲ "
(C)	20	25			M-25-25			BR202A	Cath. Bypass
8	.01	600	4105	TP410	S-6-01	TC-11	684-.01	DT6S1	Line Bypass
9	.001	600	4104	TP404	S-6-001	TC-21	684-.001	DT6D1	6K6 Plate Bypass
10	.01	400	4103	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.005	400	4102	TP408	S-6-005	TC-25	484-.005	DT6D5	Tone Compensation
12	.005	400	4102	TP408	S-6-005	TC-25	484-.005	DT6D5	Audio Coupling
13	.05	400	4101	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Bypass Pwr. Supp.
14	.05	200	4100	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
15	.05	200	4100	TP426	S-4-05	TC-15	484-.05	DT4S5	" "
16	.05	400	4101	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
17	100	500	4000	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
18	100	500	4000	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
19	100	500	4000	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Vol. Cont.
20	100	500	4000	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cap.

CONTROLS

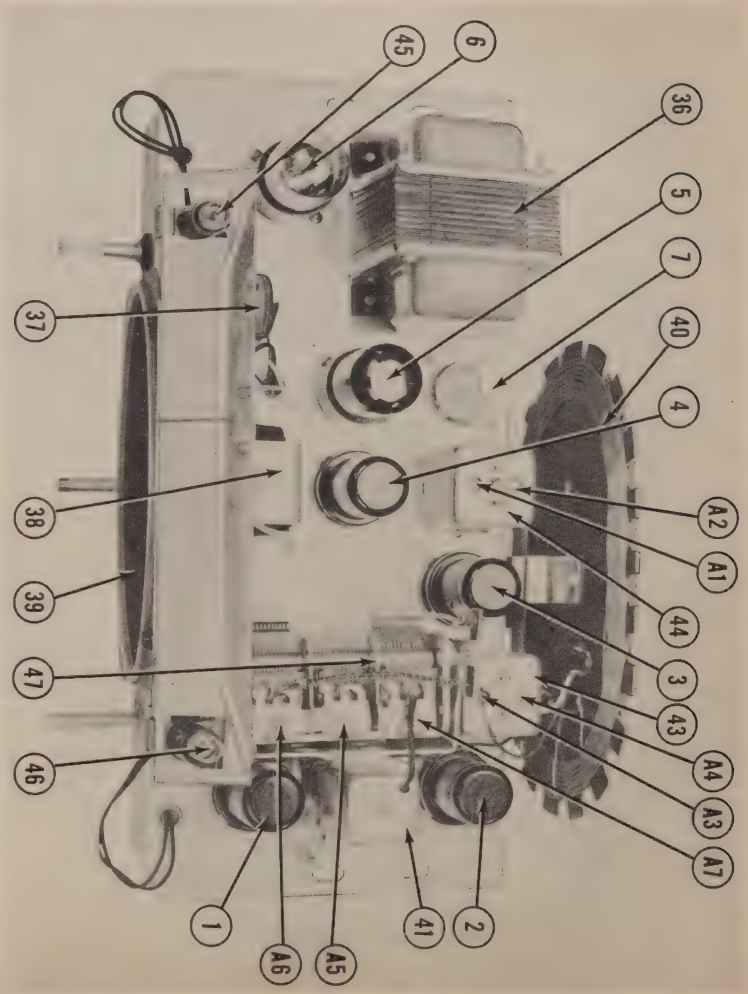
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21(A)	500KΩ	1	4800	MR48	D13-133	M-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions.
22(A)	250KΩ	1	4801	MR44	D13-130	M-64-Z	Tone Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 22A per instructions.
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	IRC PART No.	IDENTIFICATION CODES
23	220KΩ	½	4500	BTS-220K	Red-Red-Yl. AVC Network
24	10KΩ	½		BTS-10K	Br.-Blk.-Or. Osc. Grid See Note 1
25	2.2 Meg.	½	4502	BTS-2.2 Meg	Red-Red-Grn. AVC Network
26	10KΩ	2	4503	BT-2-10K	Br.-Blk.-Or. Screen Dropping
27	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Diode Load
28	47Ω	½	4508	BW-½-47	Yl.-Vi.-Blk. 1st AF Cathode
29	10 Meg.	½	4505	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
30	220KΩ	½	4500	BTS-220K	Red-Red-Yl. 1st AF Plate Load
31	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Output Grid Load
32	560Ω	½	4507	BW-½-560	Grn.-Blue-Br. Output Cathode
33	330Ω	½	4509	BW-½-330	Or.-Or.-Br. Audio Feedback
34	15KΩ	½		BT-15K	Br.-Grn.-Or. Osc. Grid-See Note 1
35	10 Meg.	½	4505	B S-10 Meg.	Br.-Blk.-Blue AVC Network-See Note 1

Note 1-In some models items 24 and 34 are a single 22KΩ resistor and item 35 is omitted.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	HOFFMAN PART No.	STANCOR PART No.	THORDARSON PART No.	
36	117VAC @ .480A	290-290 @ .033A	5.9VAC @ 2.65A		5000	P-1620*	T-13R20*	*Use universal mounting brackets and drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HOFFMAN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
37	7750Ω	3.1Ω	580Ω	.92Ω	5100	A-3876	T-14S81		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	HOFFMAN PART No.	JENSEN PART No.		
38	1460Ω	3.1Ω	9000			
	CONE DIA.	VC DIA.				
39	4"x6"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	
40	Loop Ant.	0Ω	2.2Ω	5201		
41	RF Coil	.5Ω	5.8Ω	5202		
42	Osc. Coil		5.5Ω	5200	14-1040	
43	Input IF	14.4Ω	14.4Ω	5203	14-6658	
44	Output IF	26.5Ω	24Ω	5204	14-6660	

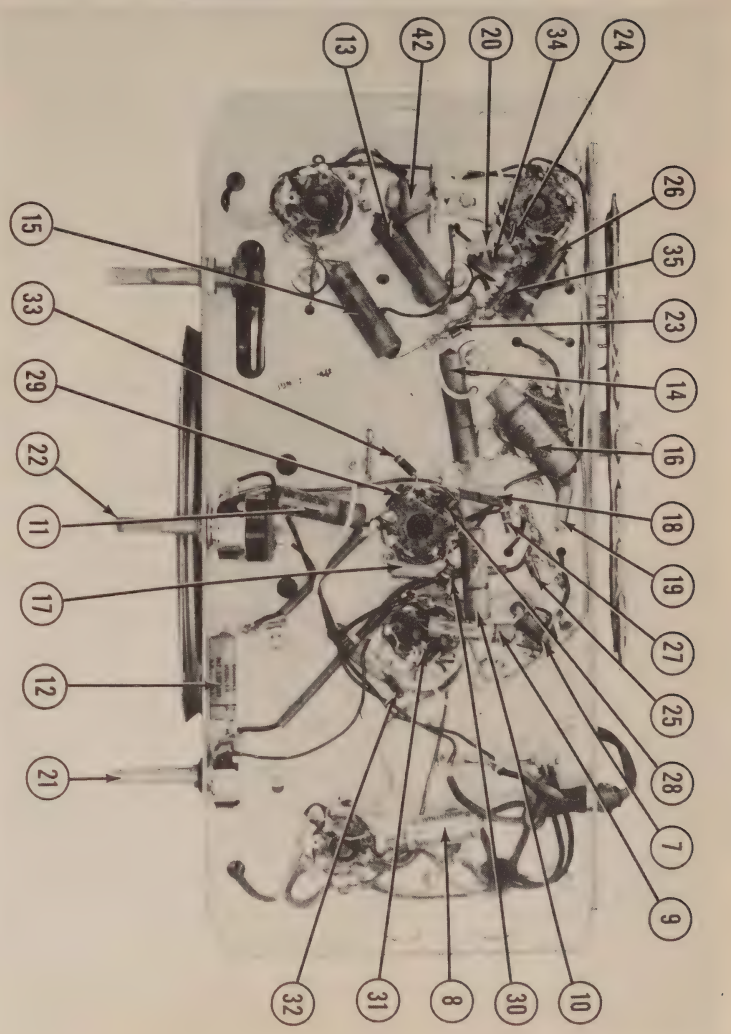
DIAL LIGHT

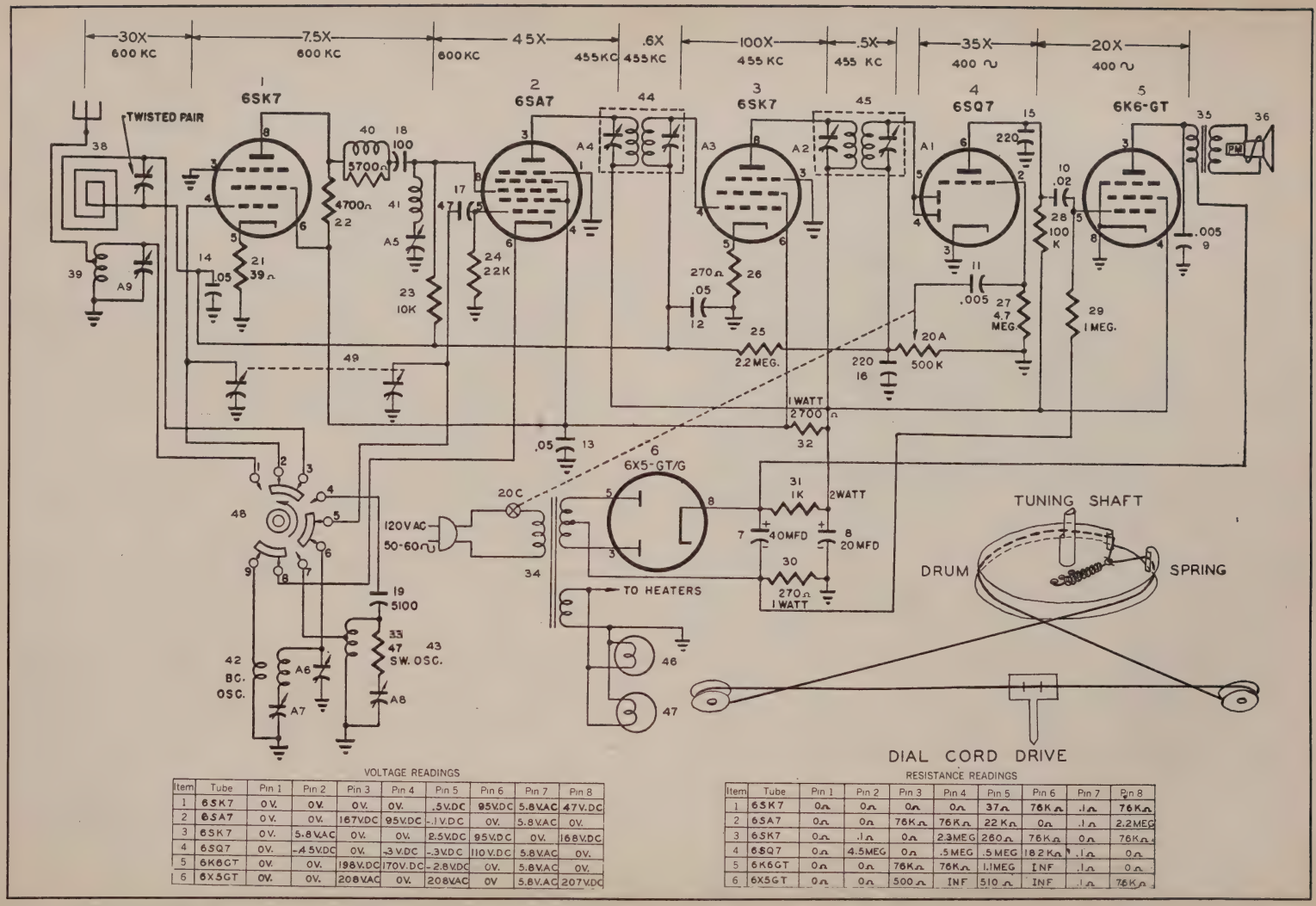
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HOFFMAN PART No.		
45	Bayonet	6-8	0.25	Blue			Type 44
46	Bayonet	6-8	0.25	Blue			" "

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
47	Tuning Cap.		3 Gang Variable Cap. (388-388-190MF.)

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	167VDC	95V.DC	-1.1V.DC	0V.	5.8VAC	47V.DC
2	6SA7	0V.	0V.	167VDC	95V.DC	-1.1V.DC	0V.	5.8VAC	0V.
3	6SK7	0V.	5.8VAC	0V.	0V.	2.5VDC	95VDC	0V.	168VDC
4	6SQ7	0V.	-4.5VDC	0V.	-3V.DC	-3VDC	110V.DC	5.8VAC	0V.
5	6K6GT	0V.	0V.	198V.DC	170V.DC	-2.8VDC	0V.	5.8VAC	0V.
6	6X5GT	0V.	0V.	208VAC	0V.	208VAC	0V	5.8V.AC	207VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	0Ω	37Ω	76KΩ	.1Ω	76KΩ
2	6SA7	0Ω	0Ω	76KΩ	76KΩ	22KΩ	0Ω	.1Ω	2.2MEG
3	6SK7	0Ω	.1Ω	0Ω	2.3MEG	260Ω	76KΩ	0Ω	76KΩ
4	6SQ7	0Ω	4.5MEG	0Ω	.5MEG	.5MEG	182KΩ	.1Ω	0Ω
5	6K6GT	0Ω	0Ω	76KΩ	76KΩ	1.1MEG	INF	.1Ω	0Ω
6	6X5GT	0Ω	0Ω	500Ω	INF	510Ω	INF	.1Ω	76KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE
MODELS 54BR1503A, B, C;
54BR1504A, B, C

AIRLINE MODELS 54BR-1503A

TRADE NAME	Airline Models 54BR-1503A, B, C & 1504A, B, C.
MANUFACTURER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .235 Amps. @ 117V AC
TUNING RANGE—BROADCAST	530-1630KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #4 (grid) of 12SK7. Low side to B-.	455KC	High freq. end of dial. Rotor full open.	Across voice coil	A1,A2.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between signal generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	High side to pin #8 (grid) of 12SA7. Low side to B-.	"	"	"	A3,A4.	"
"	"	1630KC	"	"	A5	"
200 MMFD	High side to ext. ant. clip. Low side to B-.	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output.

Place loop in same relative position it will be with set in cabinet. Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	6R	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	5AC	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	40	150	A-8C-10077	FP357	DY-40+30+20-150	EL-224	AF844D	UP4CJ1	■ Filter
(B)	20	150							▲ "
(C)	20	150							"
6(A)	60	150	A-8C-10946		DY-60+40+20-150				■ Filter *
(B)	40	150							▲ "
(C)	40	150			M-20-150				"
6(A)	40	150	11992	FP306#	DY-3x20-150††	EL-24	AF88D	UP4CJ1T††	■ Filter †
(B)	20	150							▲ "
6(A)	60	150	11993	FP357††	DY-60+40-150	EL-26	AF1010D	UP6BJ34	■ Filter ‡
(B)	40	150							▲ "
7	.1	400	C-8D-10760	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
8	.02	600	C-8D-10772	TP412	S-6-02	TC-12	684-.02	DT6S2	50L6 Plate Bypass
9	.004	600	C-8D-10768	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
10	.002	600	C-8D-10769	TP405	S-6-002	TC-22	684-.002	DT6D2	" "
11	.1	200	C-8D-10771	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
12	.05	200	C-8D-10770	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
13	.1	400	C-8D-10763	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
14	.01	400	C-8D-10761	TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Coupling
15	220	500	C-8F3-10	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
16	220	500	C-8F3-10	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Vol. Cont.
17	100	500	C-8F3-8	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
18	100	500	C-8F3-8	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.
19	220	500	C-8F3-10	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling

* For 25 Cycle Models
† used in Series C Models
‡ For 25 Cycle Series C Models
# Do not Use Bypass Section
†† Parallel Two Sections to Obtain Desired Capacity

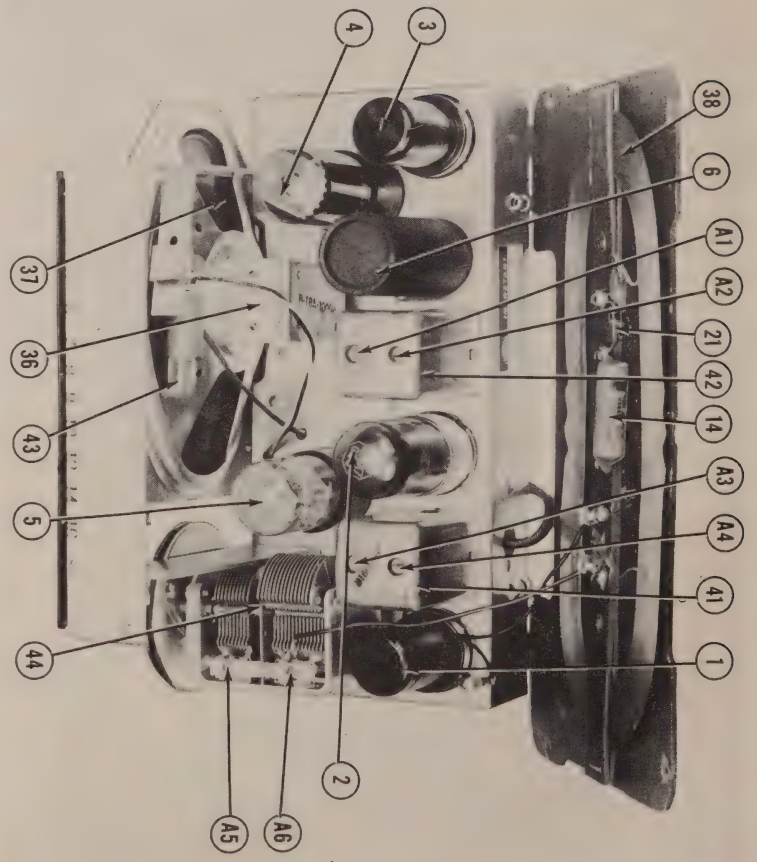
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20(A)	500KΩ	1	A-10A-10078	MK401	D13-133	A1-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 20A per instructions.
(C)	Switch		" "	M26	41	Sw-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
21	1000Ω	½	C-9B1-13	BTS-1000	Br.-Blk.-Red Ant. Loading
22	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
23	22K	½	C-9B1-7o	BTS-22K	Red-Red-Or. Osc. Grid
24	220KΩ	½	C-9B1-90	BTS-220K	Red-Red-Yl. Line Isolating
25	47Ω	½	C-9B1-5	BW-½-47	Yl.-Vi.-Blk. IF Cathode
26	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Diode Load
27	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
28	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONTINUED)

29	220KΩ	½	C-9B1-90	BTS-220K	Red-Red-Yl. 1st AF Plate Load
30	150Ω	½	C-9B1-82	BW-½-150	Br.-Grn.-Br. Output Cathode
31	470KΩ	½	C-9B1-94	BTS-470K	Yl.-Vi.-Yl. Output Grid
32	1200Ω	1	C-9B2-33	BTA-1200	Br.-Red-Red Filter
33	200Ω	1	C-9B2-83	BW-1-180	Red-Blk.-Br. "
34	27Ω	½	C-9B1-43	BW-½-27	Red-Vi.-Blk. Surge Limiter

Note: On series "B" and "C" of 54BR-1503 and 54BR-1504 a 33Ω 1 watt resistor has been added between pin 7 of the 35Z5GT and pin 2 of the 50L6GT. Also the 180Ω 1 watt filter resistor has been omitted.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
35	3550Ω	3.2Ω	202Ω	.63Ω	21C-10074A	A-3876	T-14382		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	AIRLINE PART No.	JENSEN PART No.		
36	PM (Oval)	3.2Ω	18A-10094			
	CONE Dia.	VC DIA.				
37	5"x4"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
38	Loop Ant.	0Ω	1Ω	†		
39	Osc. Coil	.5Ω	3.5Ω	A-13D-10089	14-1040	
40	RF Choke	0Ω		A-16A-10090		
41	Input IF	39Ω	33Ω	B-13B-10091	16-6658	
42	Output IF	27.5Ω	28Ω	B-13B-10092	16-6880	

† C212-10435 or C212-11058 for Walnut Cabinet - Includes Loop, Back, Resistor (21), Capacitor (24)
C212-10435-1 or C212-11058-1 for Ivory " - " " " " " " " "

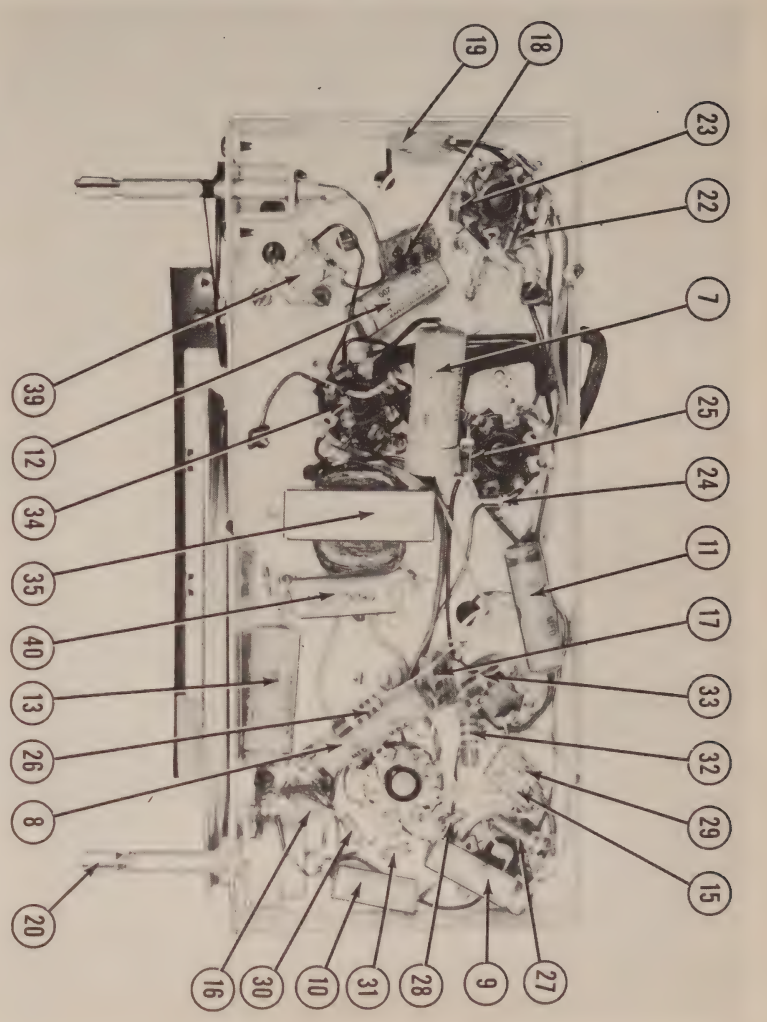
DIAL LIGHT

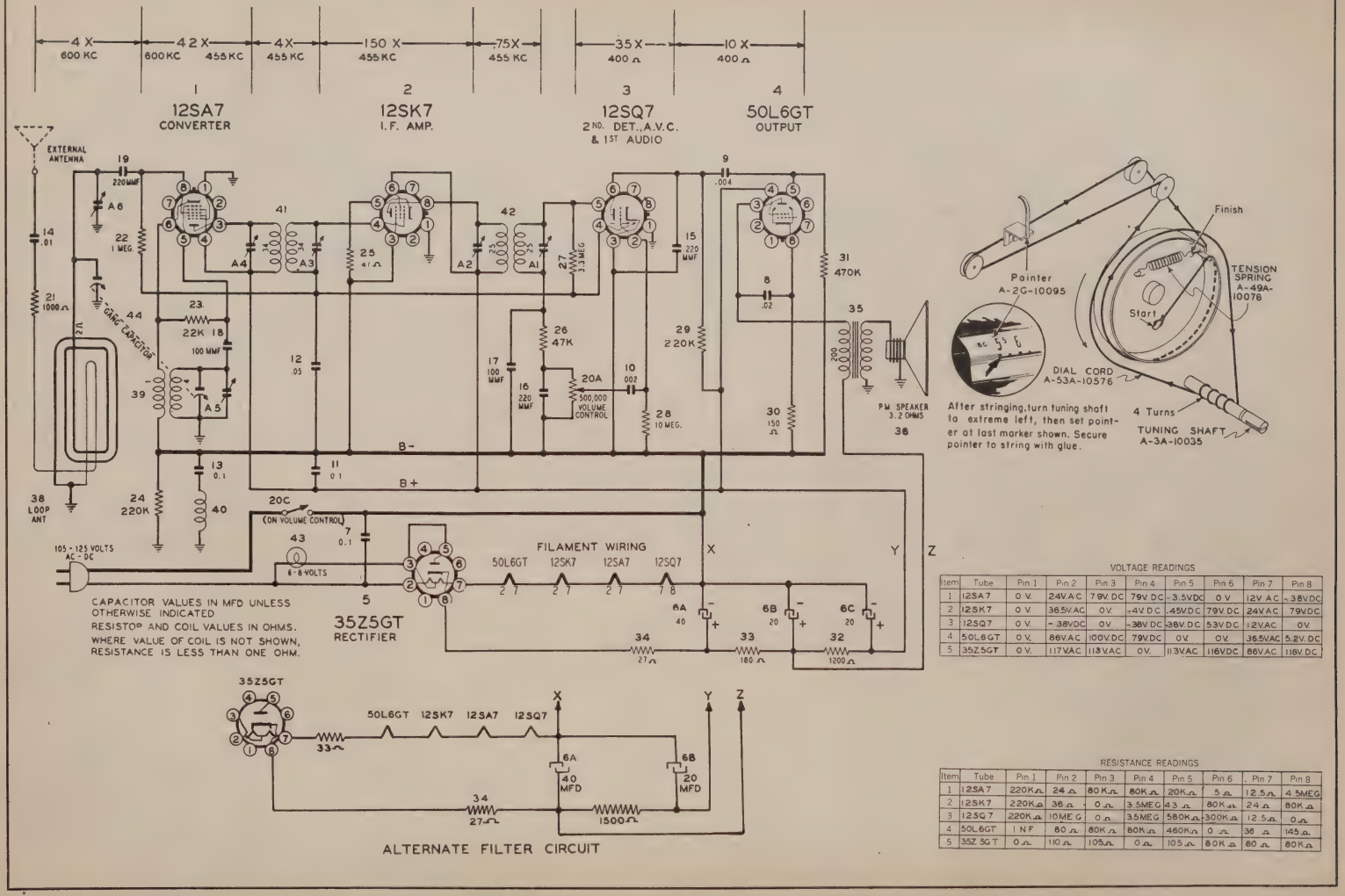
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
43	Bayonet	6-8	0.15	Brown	A-46A-3560		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
44	Tuning Cap.	B-21D-10040	2 Gang Variable Cap.
	Dial Scale	B-6D-10031	Walnut Cabinet
	" "	B-6D-10031-1	Ivory "
	Crystal	A-6J-10032	For Dial
	Cabinet	6C-10000-46	Walnut Bakelite
	"	6C-10000-9	Ivory Bakelite
	Knob	B-5B-10011-47	54BR1503,54BR1504A only-Walnut
	"	B-5B-10011-17	54BR1503, 54BR1504B&C only-Walnut
	"	B-5B-10011-8	Ivory

CHASSIS—BOTTOM VIEW




4 X 600 KC
42 X 600 KC 455 KC
4X 455 KC
150 X 455 KC
75X 455 KC
35 X 400 Ω
10 X 400 Ω
1 12SA7 CONVERTER
2 12SK7 I.F. AMP.
3 12SQ7 2ND. DET., A.V.C. & 1ST AUDIO
4 50L6GT OUTPUT
EXTERNAL ANTENNA
LOOP ANT
105 - 125 VOLTS AC - DC
GANG EXPANSION
(ON VOLUME CONTROL)
6-8 VOLTS
500,000 VOLUME CONTROL
PM SPEAKER 3.2 OHMS
B-
B+
FILAMENT WIRING
50L6GT 12SK7 12SA7 12SQ7
35Z5GT RECTIFIER
CAPACITOR VALUES IN MFD UNLESS OTHERWISE INDICATED
RESISTOR AND COIL VALUES IN OHMS.
WHERE VALUE OF COIL IS NOT SHOWN, RESISTANCE IS LESS THAN ONE OHM.
ALTERNATE FILTER CIRCUIT
Finish
Pointer A-2G-10095
TENSION SPRING A-49A-10078
Start
DIAL CORD A-53A-10576
4 Turns
TUNING SHAFT A-3A-10035
After stringing, turn tuning shaft to extreme left, then set pointer at last marker shown. Secure pointer to string with glue.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0 V.	24V.AC	7.9V.DC	79V.DC	-3.5VDC	0 V	12V.AC	-38VDC
2	12SK7	0 V.	36.5V.AC	0V.	-4V.DC	-45VDC	79V.DC	24V.AC	79VDC
3	12SQ7	0 V.	-38VDC	0V.	-38V.DC	-38V.DC	53V.DC	12VAC	0V.
4	50L6GT	0 V.	86VAC	100V.DC	79VDC	0V.	0V.	36.5VAC	5.2V.DC
5	35Z5GT	0 V.	117VAC	113VAC	0V.	113VAC	116VDC	86VAC	116V.DC

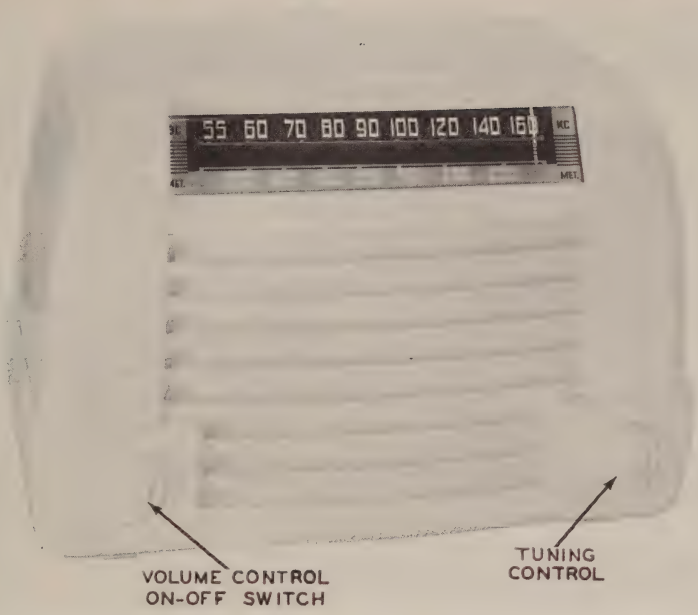
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	220KΩ	24 Ω	80KΩ	80KΩ	20KΩ	5 Ω	12.5Ω	4.5MEG
2	12SK7	220KΩ	36 Ω	0 Ω	3.5MEG	43 Ω	80KΩ	24 Ω	80KΩ
3	12SQ7	220KΩ	10MEG	0 Ω	3.5MEG	580KΩ	300KΩ	12.5Ω	0 Ω
4	50L6GT	1 NF	80 Ω	80KΩ	80KΩ	460KΩ	0 Ω	36 Ω	145Ω
5	35Z5GT	0 Ω	110Ω	105Ω	0 Ω	105Ω	80KΩ	80 Ω	80KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MANTOLA
MODELS R654-PM, R654-PV



MANTOLA
MODELS R654-PM, R654-PV

MANTOLA MODEL R654-PV

TRADE NAME	Mantola Models R654-PM, R654-PV
SUPPLIER	The B. F. Goodrich Co., 500 South Main Street, Akron, Ohio
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC Rating .230 Amps. @ 117V.AC
TUNING RANGE—BROADCAST	540-1630KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
250MMFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial. Rotor full open.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output. Use isolation transformer if available. If not connect isolating capacitor between generator ground lead and receiver B-.
"	"	1630KC	"	"	A5	"
	Loop	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.

Check dial pointer positions with dial diagram. Volume control at maximum volume and output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8C	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MANTOLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	30	150	67A8	TN129	DB-40+30+20-150	TA-330		EZ42215*	Filter - Yellow
(B)	30	150						"	- Red
(C)	20	150				UT-201		"	- Blue
6(A)	50	150	67A3	2N520	M-50+30-150	TA-530	PRS150-40-40	BRD3515	Filter *
(B)	30	150						"	"
7	.05	400	64B1-22	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.2	900	64A2-1	TP419	S-3-2	TC-2	684-.2	DT6P2	Line Isolating
9	.02	400	64B1-24	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
10	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
12	.02	400	64B1-24	TP423	S-4-02	TC-12	484-.02	DT4S2	Fixed Padder
13	.1	200	64B1-30	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
14	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	Ant. Coupling
15	500	500	65B7-27	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
16	250	500	65B7-22	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Vol. Cont.
17	20	500	65B5-5	MC220	M0.5-425	MS-42	1468-.000025	5W5Q2	Fixed Trimmer
18	50	500	65B7-11	MC205	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.

*Used in Earlier Models

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19(A)	1 Meg.	1	75B1-3	MK402	D13-137	A1-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KES-3	Attach to 1PA per instructions
(C)	Switch		" "	M23	41	SW-A	" " " " "

RESISTORS

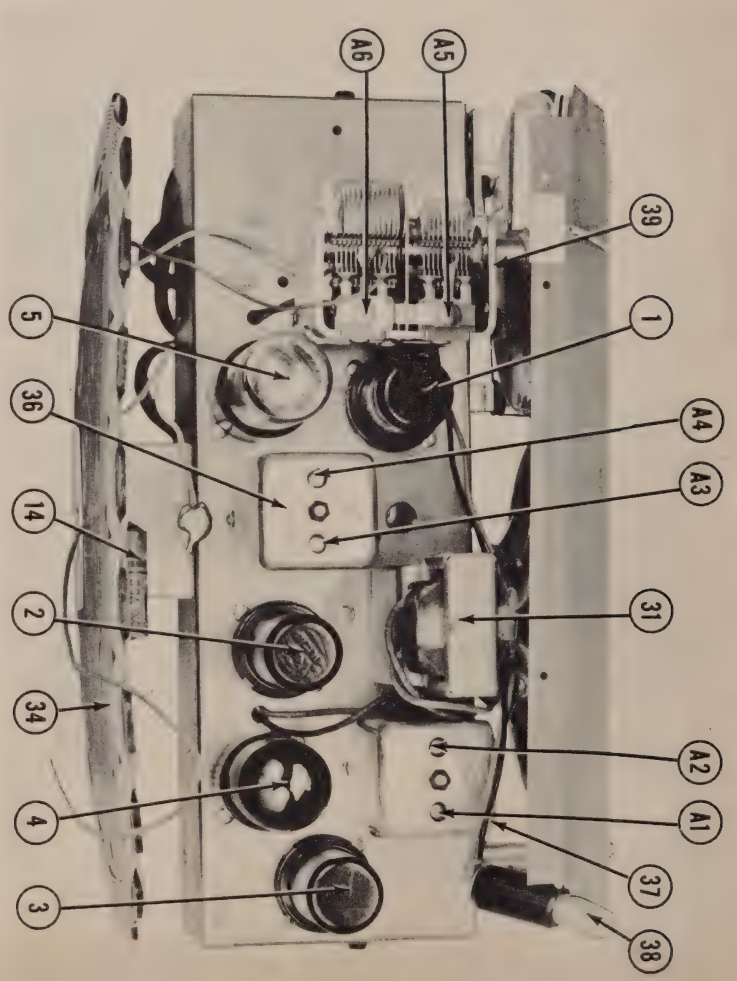
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	IRC PART No.	IDENTIFICATION CODES
20	22KΩ	½	60B6-223	BTS-22K	Red-Red-Or. Osc. Grid
21	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
22	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
23	220KΩ	½	60B6-224	BTS-220K	Red-Red-Yl. 1st AF Plate Load
24	470KΩ	½	60B6-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	½	60B8-151	BW-½-150	Br.-Grn.-Br. " Cathode
26	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl. Line Isolating
27	150Ω	1	60B28-1	BW-1-150	Br.-Grn.-Br. Filter
28	1000Ω	1	60B28-2	BTA-1000	Br.-Blk.-Red "
29	33Ω	1	60B28-3	BW-1-33	Or.-Or.-Blk. Surge Limiter †

†Not used in all Models.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: MANTOLA PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
30	85 MA	319Ω	3.6H	74A1	C-1711	T-14C63	Used in Early Productions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MANTOLA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
31	2350Ω	3.15Ω	150Ω	.52Ω	Part of 78B4-4	A-3876	T-14S82		Bend mounting tabs down and mount on original bracket. File out slots if necessary.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MANTOLA PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
32	PM	3.15Ω	76B4-4	ST-106		
	CONE DIA.	VC DIA.				
33	4-9/16"	1/2"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MANTOLA PART No.	MEISSNER PART No.	
34	Loop Ant.	0Ω	1.5Ω	69B4		
35	Osc. Coil		5.5Ω	69A5	14-1040	
36	Input IF	22Ω	22Ω	72B3	15-6658	
37	Output IF	25Ω	23Ω	72B4	16-6660	

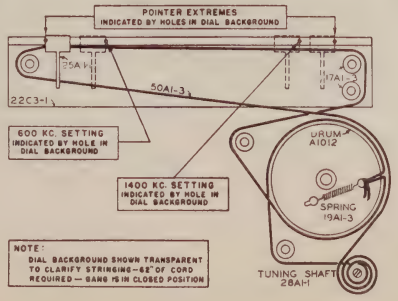
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MANTOLA PART No.		
38	bayonet	6-8	0.15	Brown	61A1-8		Type 47

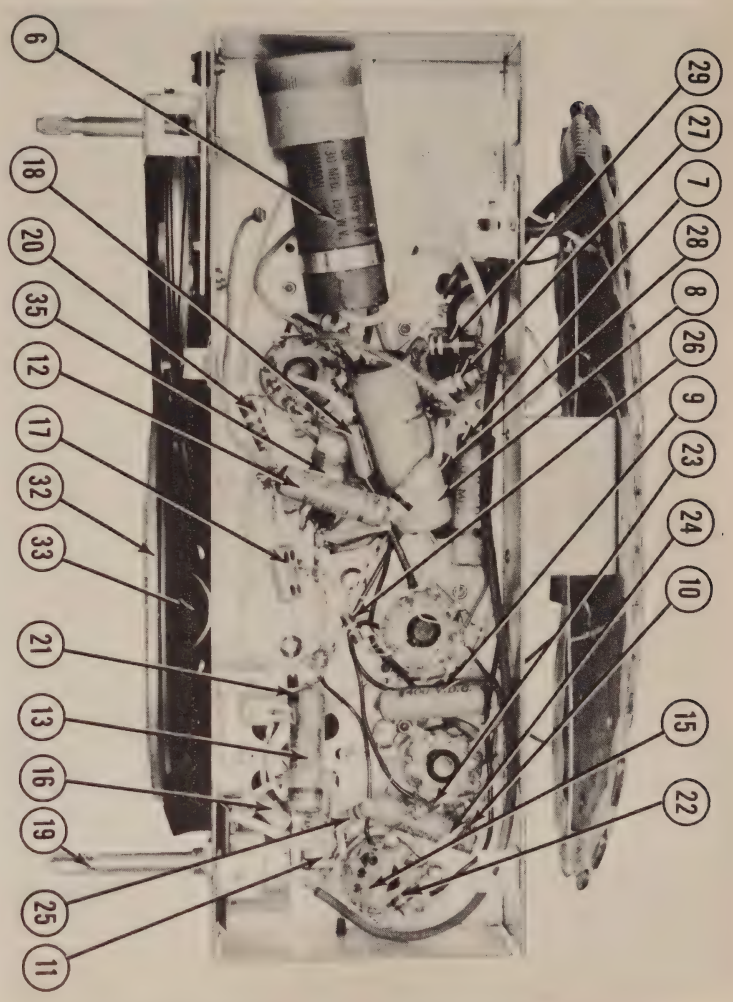
MISCELLANEOUS

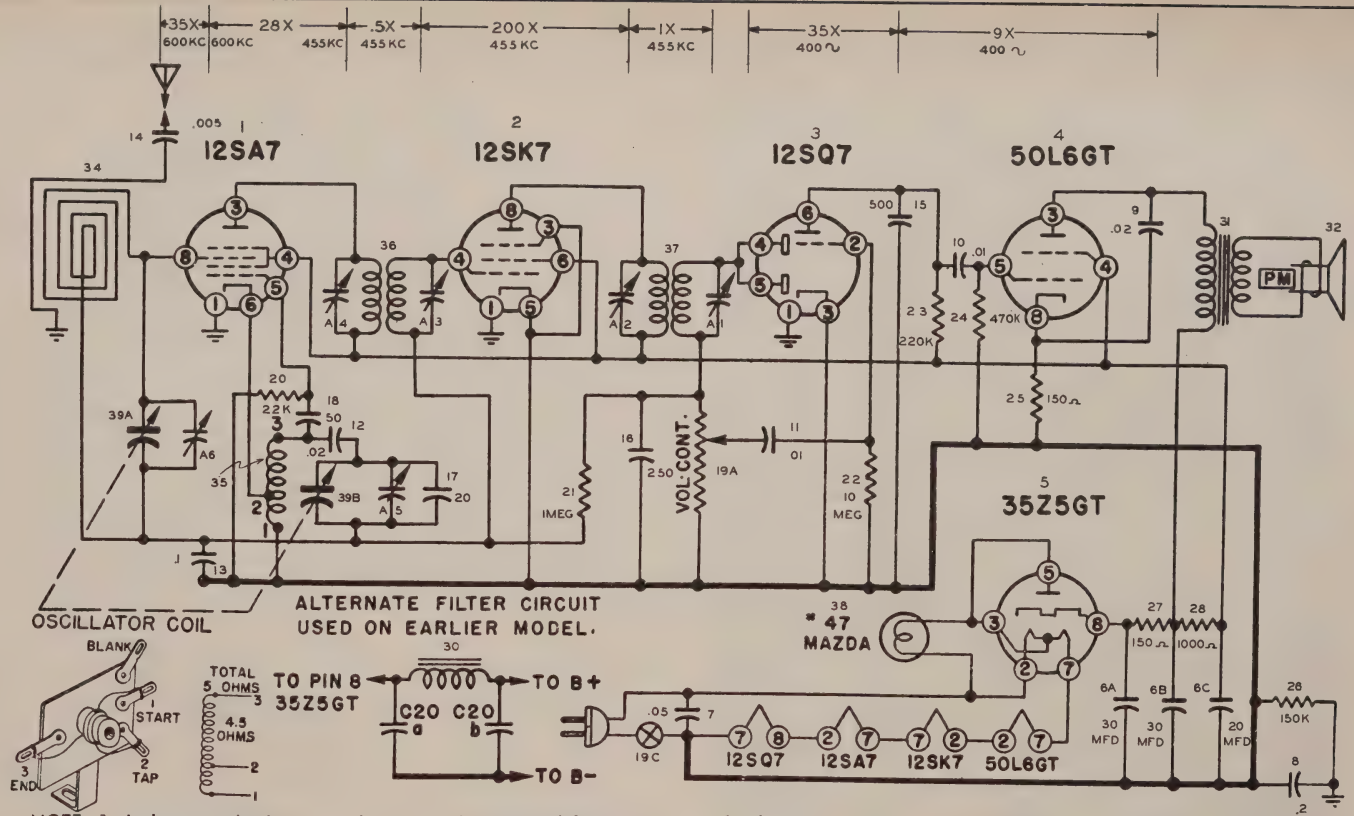
ITEM No.	PART NAME	MANTOLA PART No.	NOTES
39	Tuning Cap.	68A2	2 Gang Variable Cap.
	Cabinet	34D5-1	Ivory
	"	34D5-2	Mahogany
	Knob	33A7-1	Ivory
	"	33A7-2	Mahogany
	Scale	21B8-1	Glass Dial

DIAL STRINGING AND POINTER SETTINGS



CHASSIS—BOTTOM VIEW





NOTE: 1. In later production 27 and 6A are disconnected from pin No. 8 of the 35Z5 and a 33-ohm 1-watt resistor (29) is connected between pin No. 8 and the junction of 27 and 6A.

2. The jumper between pins 4 and 5 on the 12SQ7 is removed and one pin is connected to the secondary of the second I.F. (36) and the other pin is connected directly to the junction point of 21 and the secondary of the 1st I.F. (35).

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	12V.AC	80V.DC	80V.DC	-2V.DC	0V.	24.5AC	-.35VDC
2	12SK7	0V.	36.5VAC	0V.	-.35VDC	0V.	80V.DC	24.5VAC	80V.DC
3	12SQ7	0V.	-.45VDC	0V.	-2V.DC	-2V.DC	53V.DC	0V.	12V.AC
4	50L6	0V.	36.5VAC	100V.DC	80VDC	0V.	0V.	8BV.DC	5.2V.DC
5	35Z5	0V.	117VAC	113VAC	111V.DC	113VAC	103V.DC	88VAC	118V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	14KΩ	12.5Ω	52KΩ	52KΩ	21KΩ	.5Ω	25Ω	2MEG
2	12SK7	14KΩ	35Ω	0Ω	2MEG	0Ω	52KΩ	25Ω	52KΩ
3	12SQ7	14KΩ	8MEG	0Ω	900KΩ	2MEG	290KΩ	0Ω	12.5Ω
4	50L6	14KΩ	35Ω	52KΩ	52KΩ	430KΩ	INF	80Ω	150Ω
5	35Z5	INF	105Ω	100Ω	52KΩ	100Ω	52KΩ	80Ω	52KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

E. C. A.
MODEL 108

E. C. A.
MODEL 108

ECA MODEL 108

TRADE NAME	ECA Model 108
MANUFACTURER	Electronic Corp. of America, 45 West 18th Street, New York, New York
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SEVEN)	Types 6SA7GT Converter, 6SF7 IF-2nd Det.-AVC, 6SL7GT AF Amp.-Phase Inv.; 2-25L6GT Power Output, 2 - 25Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC Rating .450 Amps. @ 117 Volts AC
TUNING RANGE--BROADCAST	550-1680KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 6SA7. Low side to B-.	455KC	Point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200 MMFD	High side to ant. lead. Low side to B-.	1600KC	1600KC	"	A5	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	1400KC	Tune in 1400 KC signal.	"	A6	"

Volume control at maximum volume and output of signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ECA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter		6SA7GT	8AD	
2	IF-2nd Det.-AVC		6SF7	7AL	
3	AF Amp.-Phase Inv.		6SL7GT	8BD	
4	Power Output		25L6GT	7AC	
5	Power Output		25L6GT	7AC	
6	Rectifier		25Z6GT	7C	
7	Rectifier		25Z6GT	7C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ECA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8(A)	40	150	S-CE126M	2N511	2-DSB2x40-150	TA-440		BRD4415	Filter - Blue
(B)	40	150							" - Yellow
(C)	40	150		2N514		TA-240		BRD4215	" - Red
(D)	10	150							" - Green
9	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating
10	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
11	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	" "
12	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	" "
13	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
14	.05	200		TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
15	.005	400		TP408	S-4-005	TC-25	484-.05	DT4D5	Ant. Coupling
16	.002	400		TP405	S-4-002	TC-22	484-.02	DT4D2	Tone Compensation
17	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
18	100	500		MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Vol. Cont.
19	100	500		MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
20	100	500		MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cap.

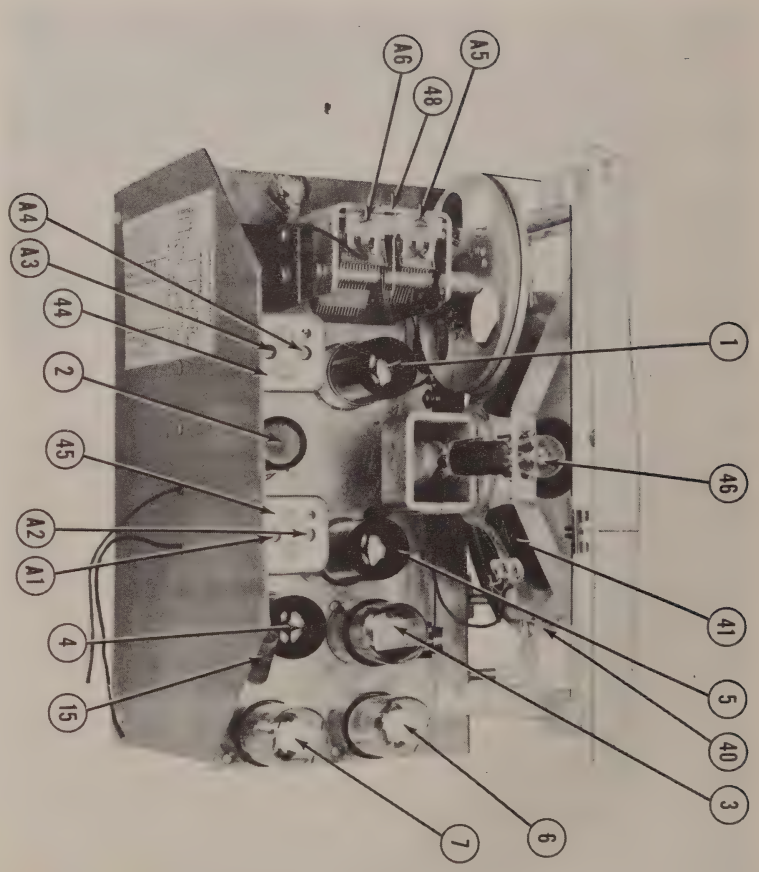
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ECA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	SRV-174-1	MR-48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions.
22A	500KΩ	1	SRV-174-1	MR48	D13-133	M-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 22A per instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ECA PART No.	IRC PART No.	IDENTIFICATION CODES
23	22KΩ	1		BTA-22K	Red-Red-Or. Osc. Grid
24	220KΩ	1/2		BTS-220K	Red-Red-Yl. Line Isolating
25	2.2 Meg.	1/2		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	47KΩ	1/2		BTS-47K	Yl.-Vi.-Or. Diode Load
27	33Ω	2		BW-2-33	Or.-Or.-Blk. Feedback Voltage Divider
28	100Ω	1/2		BW-½-100	Br.-Blk.-Br. " " "
29	470KΩ	1/2		BTS-470K	Yl.-Vi.-Yl. 1st AF Grid
30	2200Ω	1/2		BTS-2200	Red-Red-Red Audio Cathodes
31	100KΩ	1/2		BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
32	100KΩ	1/2		BTS-100K	Br.-Blk.-Yl. Inverter Plate Load
33	15KΩ	1/2		BTS-15K	Br.-Gray-Or. Inverter Grid
34	470KΩ	1/2		BTS-470K	Yl.-Vi.-Yl. Power Amp. Grid
35	470KΩ	1/2		BTS-470K	Yl.-Vi.-Yl. Power Amp. Grid
36	82Ω	1		BW-1-82	Gray-Red-Blk. Power Amp. Cathode
37	1500Ω	2		BT-2-1500	Br.-Grn.-Red Filter
38	1500Ω	½		BTS-1500	Br.-Grn.-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ECA PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA	INSTALLATION NOTES
39	2900Ω	3.2Ω	260Ω	.3Ω	S-TA-116	A-8861	T-1852*		†Drill one new mounting hole *Fabricate mounting bracket and mount on speaker.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ECA PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
	FIELD	VC 1MP.				
40	IM	4.25Ω	S-6L-1C5E	ST-110		
	CONE DIA.	VC DIA.				
41	6"	9/16"	NOT REPLY	REPL TABLE-TYPE COMPLETE SPEAKER UNIT		

R F COILS

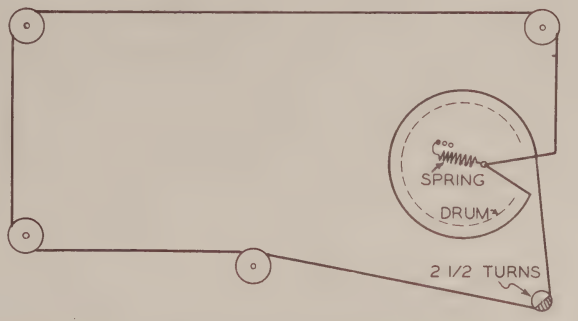
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ECA PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
42	Loop Ant.	.2Ω	3Ω			
43	Osc. Coil		3.8Ω		14-1040	
44	Input IF	30.5Ω	30.5Ω	S-LR-125	16-6658	
45	Output IF	30.5Ω	31Ω	S-LR-124	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ECA PART No.	REPLACEMENT DATA	INSTALLATION NOTES
46	Screw	125					6 watts

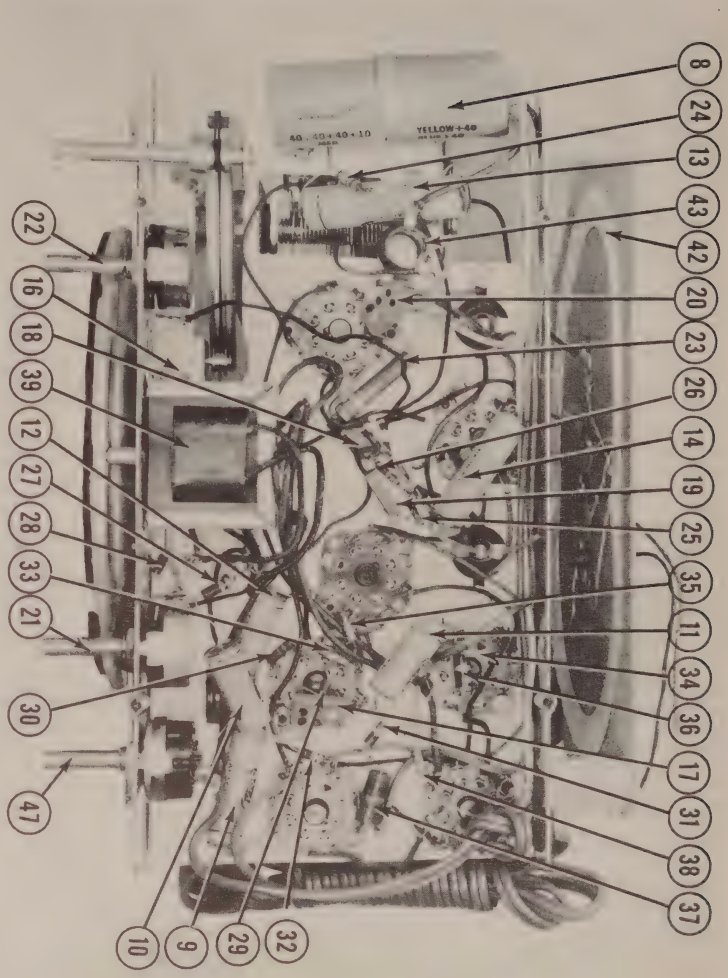
MISCELLANEOUS

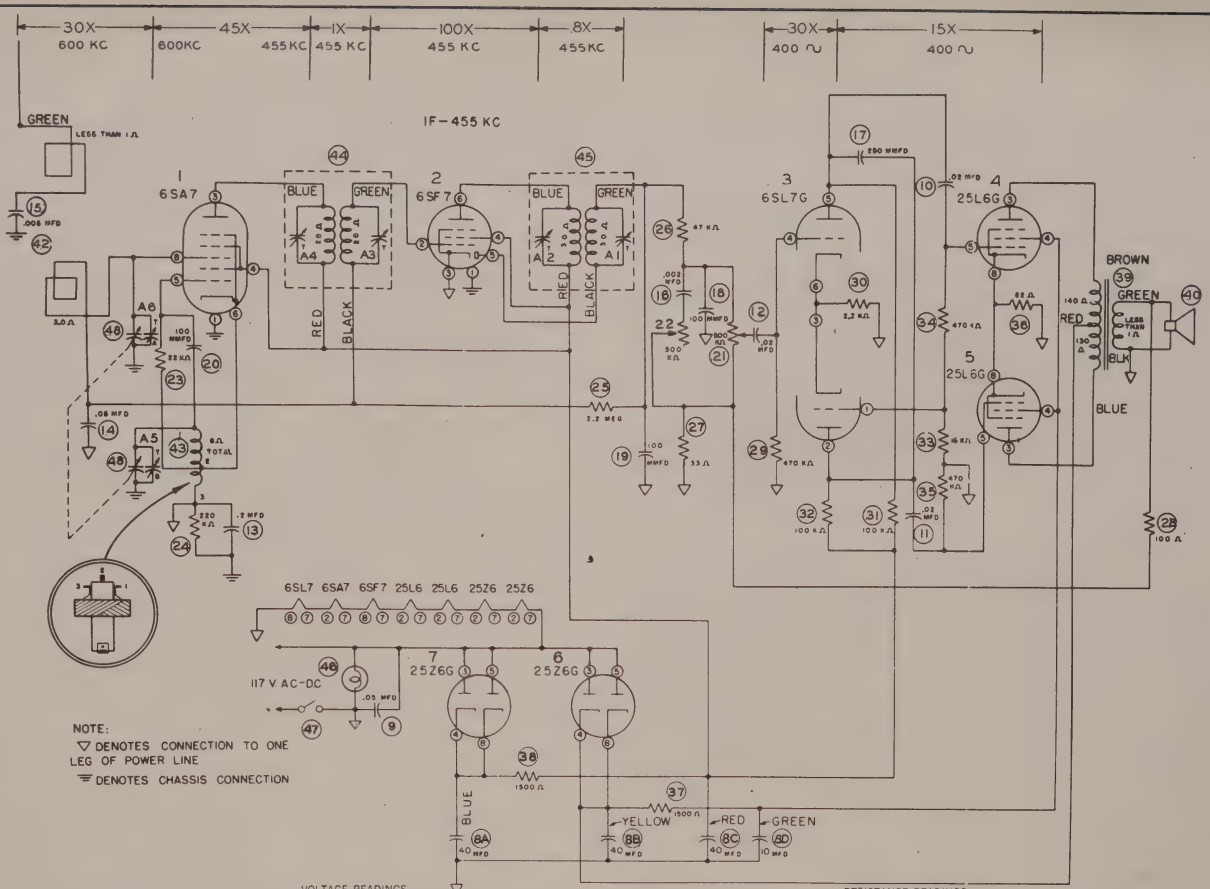
ITEM No.	PART NAME	ECA PART No.	NOTES
47	On-Off Switch		SPST
48	Tuning Cap.		2 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

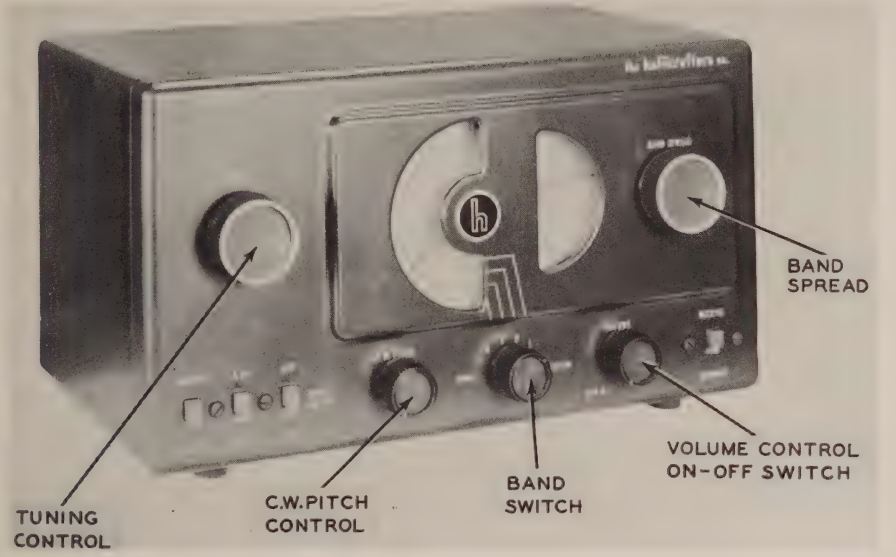
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7GT	0 V.	6.5V.AC	92V.DC	92V.DC	-8V DC	0V. DC	12.5VAC	-37 DC
2	6SF7	0 V.	0V.	0 V.	92V.DC	-37 DC	92 V. DC	19.2VAC	12.8VAC
3	6SL7GT	0 V.	67V. DC	97VDC	0 V.	67VDC	97V.DC	0 V	6.2VAC
4	25L6GT	0 V.	44.4VAC	101V. DC	97V.DC	0 V.	0 V.	19.2VAC	7.3VAC
5	25L6GT	0 V.	68V. AC	102V.DC	97V.DC	0 V.	0 V.	44.4VAC	7.3VAC
6	25Z6GT	0 V.	92V.AC	117VAC	107VDC	117VAC	0 V.	68VAC	107VDC
7	25Z6GT	0 V.	117VAC	117VAC	145V.DC	117VAC	92V.DC	92VAC	145VDC

RESISTANCE READINGS,

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7GT	215K Ω	31 Ω	52K Ω	52K Ω	22K Ω	5 Ω	6.5 Ω	2.6MEG
2	6SF7	215K Ω	28MEG	0 Ω	52K Ω	590K Ω	52K Ω	10.5 Ω	6.5 Ω
3	6SL7GT	18.1 K Ω	166K Ω	1.9K Ω	500K Ω	175K Ω	1.9K Ω	0 Ω	3.1 Ω
4	25L6GT	1 NF	20 Ω	75K Ω	75K Ω	510K Ω	1 NF	10.5 Ω	85 Ω
5	25L6GT	1 NF	29 Ω	75K Ω	75K Ω	480K Ω	0 Ω	20 Ω	85 Ω
6	25Z6GT	1 NF	39 Ω	50 Ω	75K Ω	50 Ω	1 NF	29 Ω	75K Ω
7	25Z6GT	1 NF	50 Ω	50 Ω	52K Ω	50 Ω	52K Ω	39 Ω	52K Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



HALLICRAFTERS MODEL S-38

TRADE NAME	Hallicrafters Model S-38
MANUFACTURER	Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Illinois
TYPE SET	AC - DC Superheterodyne - 4 Band Communications Receiver
TUBES (SIX)	Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-ANL, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .245 Amps. @ 117 Volts AC
TUNING RANGE	Band #1- 540-1650KC Band #2- 1650KC-5.0MC Band #3 5.0MC-14.5MC Band #4- 13.5MC-32.0MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
NONE	High side to stator plates of rear section of tuning gang. Low side to "G" on antenna strip.	455KC	"1"	1000KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Repeat adjustment.
"	"	"	"	"	"	BFO Slug	Turn off 400~ modulation on signal generator. Set CW/AM switch at CW. Remove pitch control knob and adjust slotted screw shaft for zero beat.
390Ω carbon res.	High side to "A1" on antenna strip. Low side to "G" on on antenna strip.	30MC	"4"	30MC	"	A5,A6	Adjust for maximum output. Rock gang slightly when adjusting A6.
"	"	14MC	"3"	14MC	"	A7,A8	Adjust for maximum output. Rock gang slightly when adjusting A8.
"	"	5MC	"2"	5MC	"	A9	Adjust for maximum output.
"	"	1.8MC	"	1.8MC	"	A10	Adjust for maximum output and repeat A9 at 5MC.
"	"	5MC	"	5MC	"	A11	Adjust for maximum output. Rock gang slightly.
"	"	1500KC	"1"	1500KC	"	A12	Adjust for maximum output.
"	"	600KC	"	600KC	"	A13	Adjust for maximum output and repeat A12 at 1500KC.
"	"	1500KC	"	1500KC	"	A14	Adjust for maximum output. Rock Gan. Slightly.

Set receiver controls as follows: "Speaker-Phones" switch at speaker; Volume control at full clockwise (maximum); CW/AM switch at "AM" (except for BFO adjustment); noise limiter switch at "off"; bandspread tuning at "0" (min. cap.); "standby-receive" switch at receive.
Adjust output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8C	
4	BFO-ANL	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTERS PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	45B091	TC48	DSB-40+30-150/20-25	TA-430		EZ44315C	Filter - Red
(B)	30	150		3N583					" - Yellow
(C)	30	150			M-30-150	UT-301			" - "
(D)	20	25				TA-25			Cath. Bypass - Blue
8	.25	200	46AT254J	TP430	S-4-25	TC-2	484-.25	DT4P25	Line Isolating
9	.02	400	46AW203J	TP423	S-4-02	TC-12	484-.02	DT4S2	Line Bypass
10	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	35L6 Plate Bypass
11	.01	400	46AW102J	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
12	.005	400	46AW502J	TP408	S-4-005	TC-25	484-.005	DT4D5	" "
13	.01	400	46AW102J	TP421	S-4-01	TC-11	484-.01	DT4S1	BFO Plate Bypass
14	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Cath. Bypass
15	.25	200	46AT254J	TP430	S-4-25	TC-2	484-.25	DT4P25	Screen Bypass
16	.02	400	46AW203J	TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Filter
17	.01	600	46AY103J	TP410	S-6-01	TC-11	684-.01	DT6S1	Ant. Coupling
18	.05	200	46AU503J	TP426	S-4-02	TC-15	484-.05	DT4S5	RF Bypass Pwr. Supp.
19	220	500	CM20A221K	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
20	220	500	CM20A221K	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	BFO Grid Cap.
21	470	500	CM20A471K	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	BFO Fixed Trimmer
22	2700	500	CM30A272J	MC460	MW.5-225		1467-.0025	1W5D25	RF Grid Cap.
23	220	500	CM20A221K	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Osc. Grid Cap.
24	2700	500	CM30A271J	MC460	MW.5-225		1467-.0025	1W5D25	Fixed Padder
25	510	500		MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	RF Bypass Rect.
26	220	500	CM20A221K	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
27	1200	500		MC255	M0.3-21	1FM-21	1468-.001	1W5D1	Fixed Trimmer

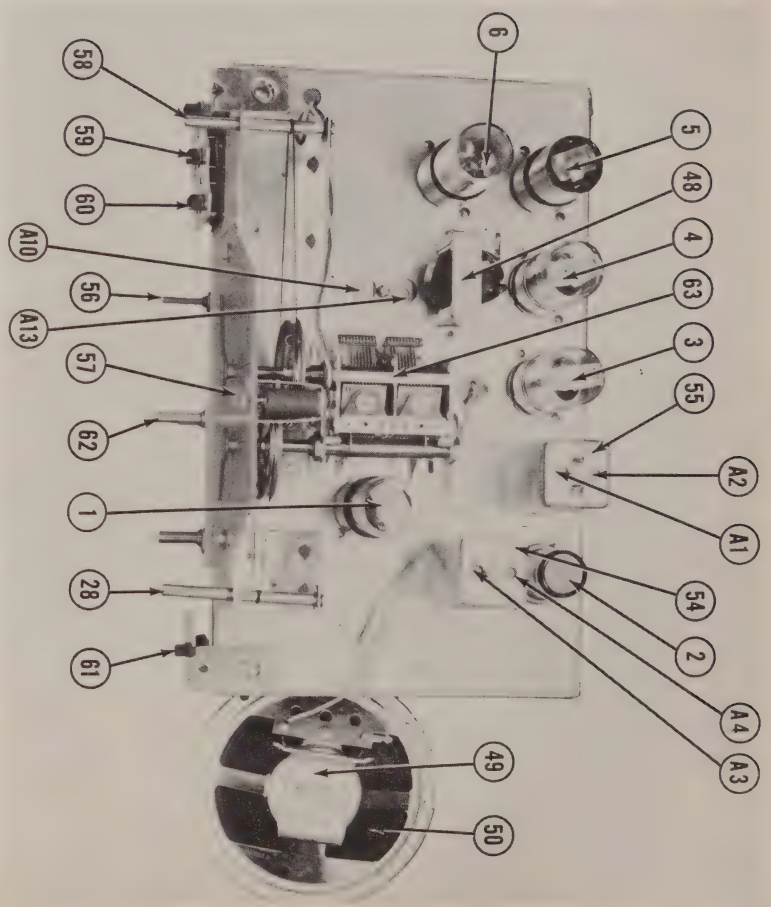
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTERS PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28(A)	500KΩ	1	25B094	MR48	D13-133	AM-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	RS-2	Attach to 28A per instructions.
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
29	10KΩ	½	RC20AE103M	BTS-10K	Br.-Blk.-Or. Ant. Shunt
30	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. Converter Grid
31	47Ω	½	RC20AE470M	BW-½-47	Yl.-Vi.-Blk. Osc. Series Grid
32	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. Osc. Grid
33	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
34	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. Diode Load
35	47Ω	½	RC20AE471K	BTS-470	Yl.-Vi.-Br. CW AVC Shorting
36	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. BFO Grid
37	10 Meg.	½	RC20AE106M	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
38	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. 1st AF Plate Load
39	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
40	150Ω	½	RC20AE151K	BW-½-150	Br.-Grn.-Br. Output Cathode
41	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red Filter
42	680Ω	1	RC30AE681M	BTA-680	Blue-Gray-Br. "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONTINUED)

43	22Ω	½	RC20AE220M	BW-½-22		Red-Red-blk. Surge Limiter
44	330Ω	½	RC20AE331M	BW-½-330		Or.-Or.-Br. Pilot Light Shunt
45	15Ω	½	RC20AE150M	BW-½-15		Br.-Grn.-Blk. Headphone Shunt
46	390Ω	½	RC20AE391K	BW-½-390		Or.-White-Br. IF Cathode
47	470Ω	½	RC20AE471K	BTS-470		Yl.-Vi.-Br. BFO Plate Load

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HALLI-CRAFTERS PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
46	3180Ω	3.1Ω	170Ω	.8Ω	55A075	A-3873	T-13S421		†Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HALLICRAFTERS PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
49	PM	3.1Ω	85C035	ST-105		
	CONE DIA.	VC DIA.				
50	4-9/16"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	HALLI-CRAFTERS PART No.	MEISSNER PART No.	
51(A)	Band 1 Ant. Coil	2Ω	4.5Ω	51C821*		*Wound on same coil form with bands 2,3.
51(B)	" 2 " "	1Ω	1Ω			" " " " " " " 1,3.
51(C)	" 3 " "	1Ω	.1Ω			" " " " " " " 1,2.
52	" 4 " "	.5Ω	.2Ω	51C818		
53(A)	" 1 Osc. "		2.8Ω	51C822**		**Wound on coil form with bands 2,3,4.
53(B)	" 2 " "		1Ω			" " " " " " 1,3,4.
53(C)	" 3 " "		0Ω			" " " " " " 1,2,4.
53(D)	" 4 " "	.1Ω	0Ω			" " " " " " 1,2,3.
54	Input IF	27Ω	28.5Ω	54C153	16-3658	
55	Output IF	24.5Ω	24.5Ω	50B184	16-3664	
56	BFO Osc. Coil		6Ω	54B031		

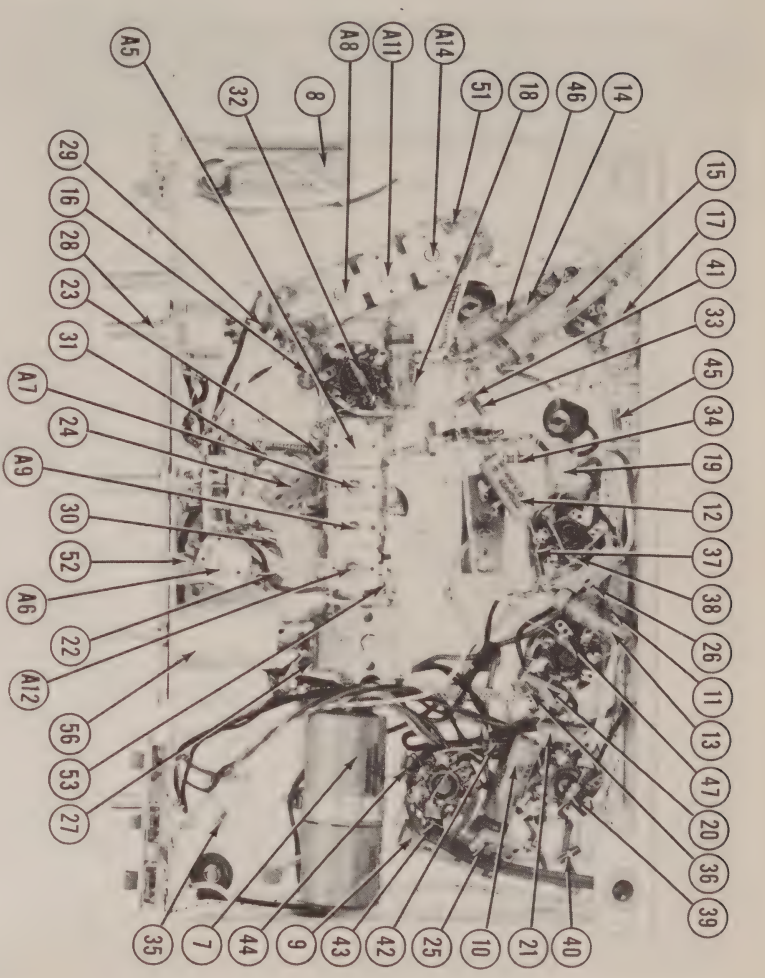
DIAL LIGHT

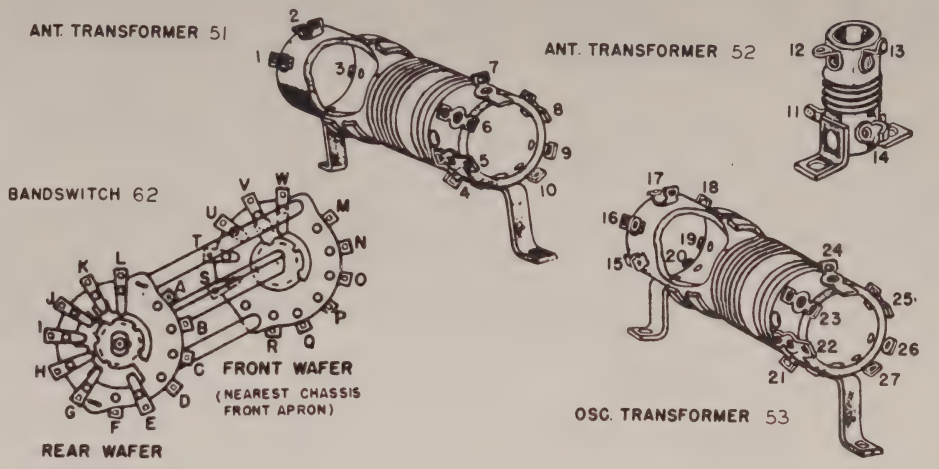
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HALLI-CRAFTERS PART No.		
57	Bayonet	6-8	0.15	brown	39A004		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	HALLI-CRAFTERS PART No.	NOTES
58	Switch	60A243	"SPEAKER-PHONES" SPDT
59	"	60A245	"AM-CW" SPDT
60	"	60A244	"NOISE LIMITER" SPST
61	"	60A244	"RECEIVE STANDBY" SPST
62	"	60A240	4 Position Bandswitch
63	Tuning Cap.	48C182	2 Gang Main & Band Spread Var. Cap.
	Trimmer	44B189	A5,A7,A9,A12 Osc. Adjustments
	"	44B129	A8,A11,A14 Ant. Adjustments
A6	"	44A039	Antenna Trimmer
	"	44 1&2	A10,A13 Osc. Padders
	Knob	15A049	Volume and Band Switch
	"	15A064	C.W. Pitch Control
	"	15A047	Tuning and Bandspread Controls
	Calibrated Dial	83B257	
	Dial Window	22B157	Glass

CHASSIS—BOTTOM VIEW

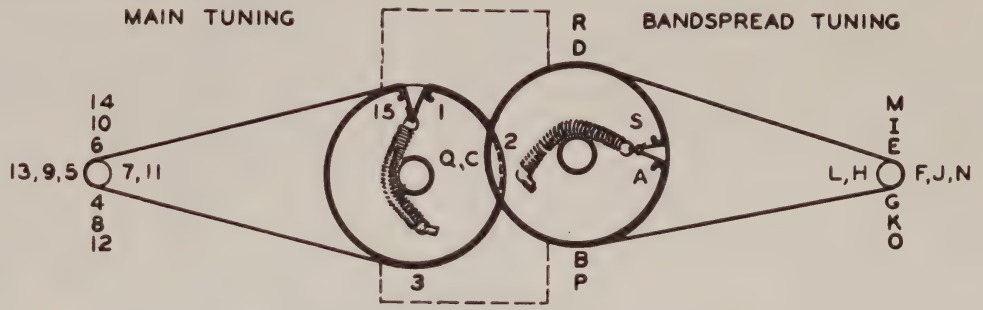




COIL CONNECTIONS

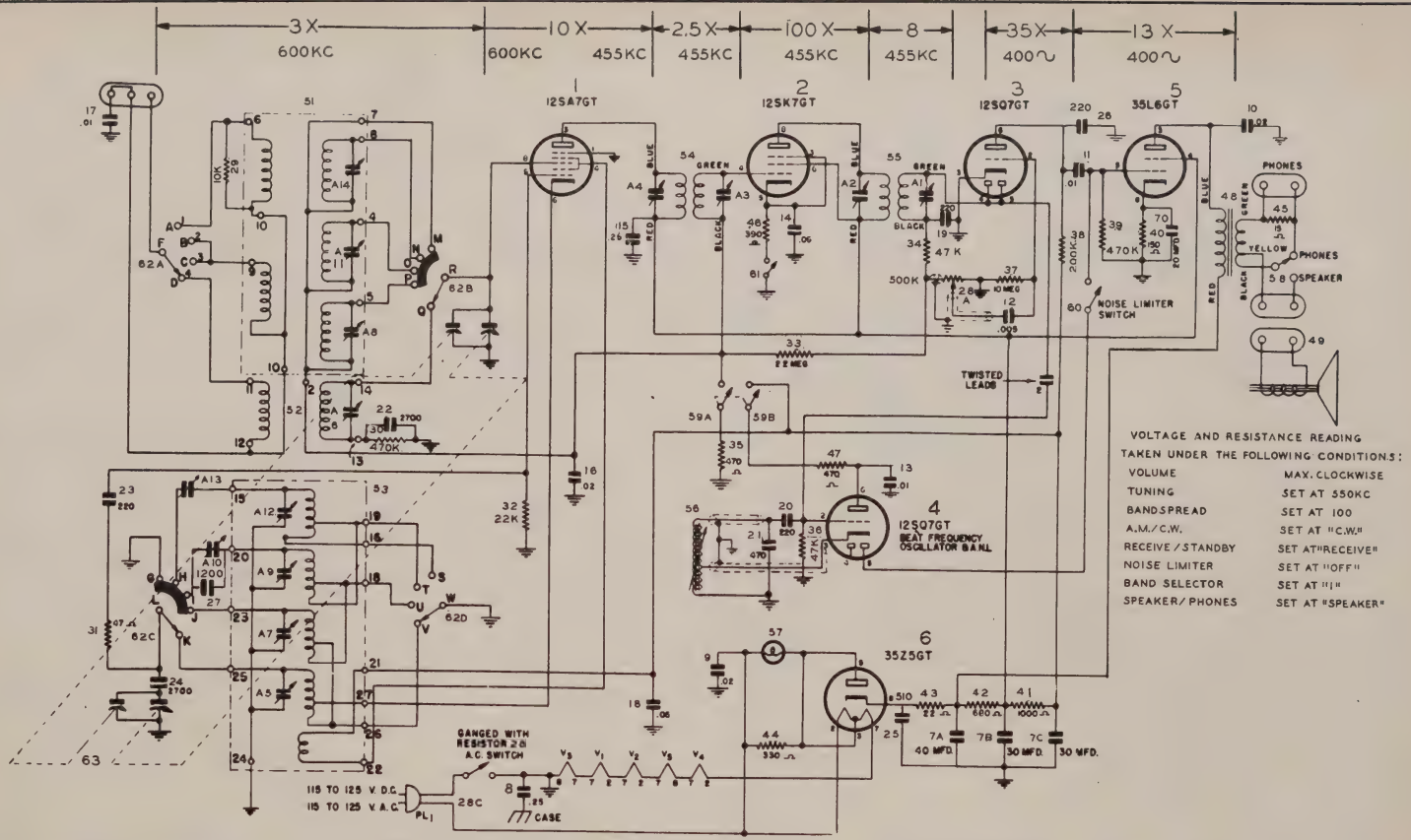
To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end of the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above, except start at position "A" on the diagram and proceed through position "S". Note that the knob drive shaft has two complete turns.



TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).

DIAL STRINGING PROCEDURE



VOLTAGE AND RESISTANCE READING TAKEN UNDER THE FOLLOWING CONDITIONS:

VOLUME	MAX. CLOCKWISE
TUNING	SET AT 550KC
BANDSPREAD	SET AT 100
A.M./C.W.	SET AT "C.W."
RECEIVE / STANDBY	SET AT "RECEIVE"
NOISE LIMITER	SET AT "OFF"
BAND SELECTOR	SET AT "1"
SPEAKER/ PHONES	SET AT "SPEAKER"

VOLTAGE READINGS

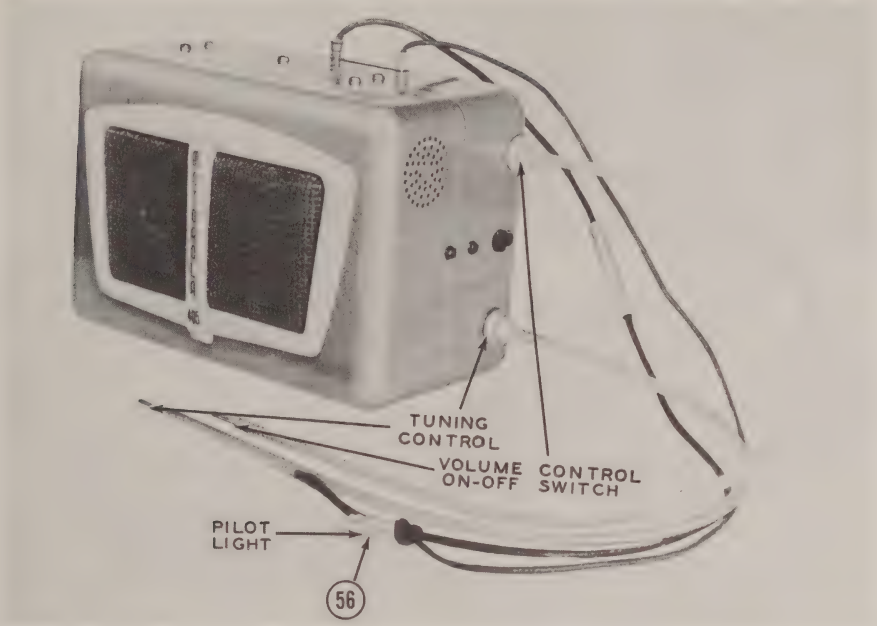
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	25.5VAC	100V.DC	90V.DC	-5.5V.DC	0V.	12.5VAC	0V.
2	12SK7GT	0V.	37.5VAC	3.5V.DC	0V.	3.5V.DC	100V.DC	25.5VAC	100V.DC
3	12SQ7GT	0V.	-7V.DC	0V.	-.47V.DC	-.47V.DC	57V.DC	12.5VAC	0V
4	12SQ7GT	0V.	0V.	0V.	0V.	0V.	100V.DC	37.5VAC	49.5V.AC
5	35L6GT	0V.	85V.AC	109V.DC	100V.DC	0V.	0V.	49.5VAC	6.1V.DC
6	35Z5GT	116V.DC	117V.AC	112V.AC	116V.DC	112V.AC	0V.	85V.AC	117V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	27Ω	125KΩ	125KΩ	20KΩ	.4Ω	13.5Ω	450Ω
2	12SK7GT	0Ω	39Ω	350Ω	450Ω	350Ω	125KΩ	27Ω	125KΩ
3	12SQ7GT	0Ω	7.5MEG	0Ω	420KΩ	420KΩ	450KΩ	13.5Ω	0Ω
4	12SQ7GT	0Ω	.2Ω	2Ω	INF	INF	125KΩ	39Ω	52Ω
5	35L6GT	0Ω	82Ω	125KΩ	125KΩ	425KΩ	INF	52Ω	145Ω
6	35Z5GT	125KΩ	105Ω	105Ω	125KΩ	105Ω	0Ω	82Ω	125KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



MOTOROLA MODEL 405

TRADE NAME	Motorola Model 405 (Chassis AS-13)
MANUFACTURER	Galvin Mfg. Corp., 4545 W. Augusta Blvd., Chicago, Ill.
TYPE SET	Superheterodyne Single Unit Automotive Set.
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT or OZ4 Rectifier.
POWER SUPPLY	6.3 Volts DC RATING - 9 Amp. @ 6.6 Volts DC
TUNING RANGE—BROADCAST	535-1600KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (grid) of 6SA7. Low side to chassis.	455KC	High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
60 MMFD and 21" coaxial lead. Cap. at generator end.	High side to ant. terminal. Low side to chassis.	1600KC	High freq. end (tuning shaft against stop and cores 1-1/8" from end of cans).	"	A5,A6, A8	" " " "
"	"	1425KC	One full turn in from high freq. end as indicated by marking manual tuning shaft (insulated coupling.)	"	49, 48, 47.	Adjust cores for maximum output. Use alignment tool, Motorola Part Number 66A76278.
"	"	Generator power off (leave connected)	Four more full turns in.		A7	Adjust for maximum noise.
Install in car and connect ant.			1400KC		A8	" " " "

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	Use either 6X5GT or 0Z4.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	350	23A27718	FP331	DY-2x30-350/50-50	EL-323	AF44J	UP6BJ38	■ Filter
B	30	300							▲ "
C	20	25					PRS50-25	BR202A	"
8	.006	1000	8A12840-A	OW344	XTIMS10-.006	TR-26	1089-.006	MD16D6	Buffer
9	.5	100	8A19133-B	TP431	S-4-5	TC-5	484-.5	DT4P5	Hash Filter
10	.5	100	8A19133-B	TP431	S-4-5	TC-5	484-.5	DT4P5	" "
11	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	6V6 Plate Bypass
12	.03	400	8A71911-D	TP424	S-6-03	TC-13	484-.03	DT4S3	Audio Coupling
13	.01	400	8K23690-E	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
14	.1	400	8K13166-D	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Plate Bypass
15	.05	400	8A14791-A	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
16	.05	400	8A14791-A	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
17	.006	100		TP409	S-6-006	TC-26	484-.006	DT6D6	Ant. Coupling
18	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
19	50	500		MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	AVC Coupling
20	50	500		MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.
21	400	500							Fixed Trimmer
22	5	500		MC205	M0.5-55	MS-55	1468-.000005	5W5V5	RF Coupling
23	120-120	500							Diode Filter
24	90	500							Ant. Filter

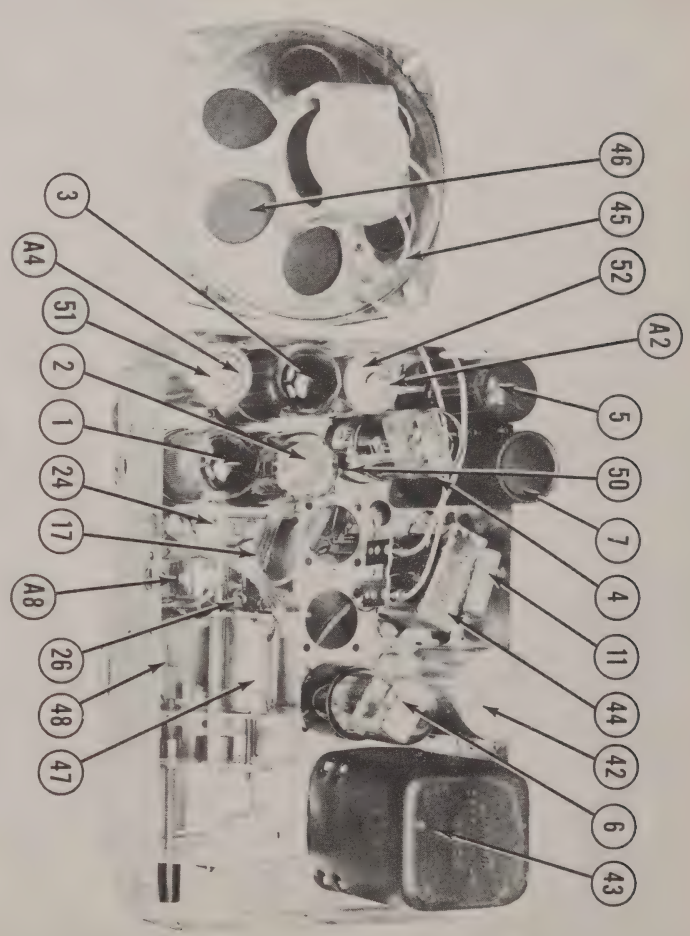
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
25A	500KΩ	1	18A71920-D	UM154			Volume Control
B	Shaft		Not Req.	SS19			Attach to 25A per instructions
C	Switch		" "	M26			" " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
26	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AVC Network
27	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Converter Grid & AVC
28	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Osc. Grid
29	10KΩ	1		BTA-10K	Br.-Blk.-Or. Screen Dropping
30	330Ω	1		BTA-330	Or.-Or.-Br. Plate Filter
31	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
32	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode Load
33	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
34	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
35	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
36	1000Ω	1		BW-1-1000	Br.-Blk.-Red Filter
37	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
38	180Ω	1		BW-1-180	Br.-Gray-Br. Voltage Divider
39	47Ω	½		BW-½-47	Yl.-Vi.-Blk. " "
40	50Ω	1		BW-1-47	Grn.-Blk.-Blk. Hash Suppression
41	50Ω	1		BW-1-47	Grn.-Blk.-Blk. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: RADIART PART No.	INSTALLATION NOTES
42	Interrupter	6	115~	3333	628	634AM	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	INSTALLATION NOTES
43	5.7VDC @2.1A each section	530VAC CT @ .060A			25B76950-E	P-4082*	T-14R35*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	INSTALLATION NOTES
44	10000Ω	4.1Ω	366Ω	.3Ω	25B7 171	A-3579	T-14R54	

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: VC IMP.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
45	4.25Ω	4.1Ω	25B7[illegible]31	CT-425		
	CONE DIA.	VC DIA.				
46	5-1/8"	0.25"	MOTOROLA PART No. 25B7[illegible]		PLATE SPEAKER UNIT	

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: MEISSNER PART No.	INSTALLATION NOTES
47	Ant. Coil	12.2Ω				Items 47 thru 55 plug into [illegible]
48	RF Coil	11.2Ω				
49	Osc. Coil	1.5Ω				
50	" " Pad		2Ω	24A70227		
51	Input IF	15Ω	14.7Ω		16-6666	
52	Output IF	16.5Ω	15.2Ω		16-6667	
53	RF Choke	6Ω				
54	" "	6Ω				
55	" "	7Ω				

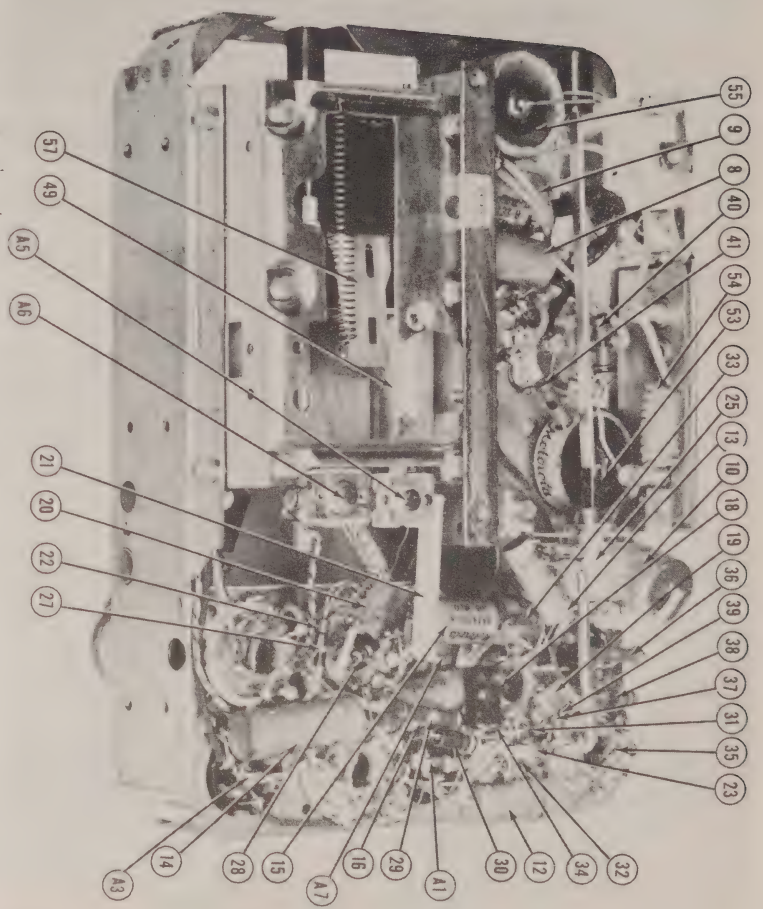
DIAL LIGHT

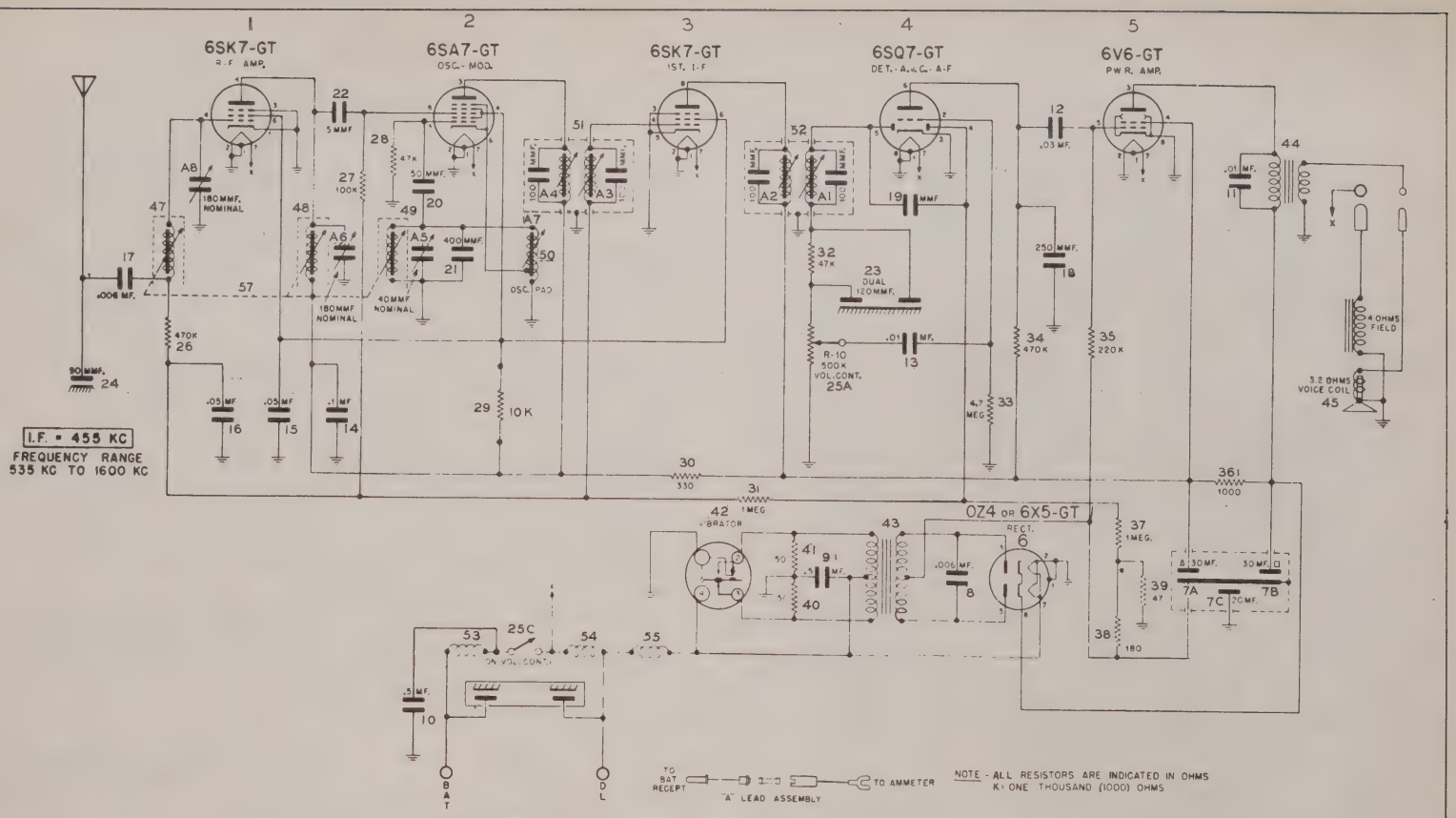
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MOTOROLA PART No.		INSTALLATION NOTES
56	bayonet	6.3	0.2	white	[illegible]		Type [illegible]

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
57	Tuning Assby.		

CHASSIS—BOTTOM VIEW





NOTE - ALL RESISTORS ARE INDICATED IN OHMS
K = ONE THOUSAND (1000) OHMS

NOTE: 6X5GT IN SET DURING VOLTAGE & RESISTANCE READINGS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-.45V.DC	0V.	82V. DC	6.3V. DC	203V.DC
2	6SA7GT	0V.	0V.	203V.DC	82V. DC	-.07V.DC	0V.	6.3V. DC	-.45V.DC
3	6SK7GT	0V.	0V.	0V.	-.15V. DC	0V.	82V.DC	6.3V. DC	215V.DC
4	6SQ7GT	0V.	-.42V.DC	0V.	-.2V. DC	-.25V.DC	77V.DC	6.3V. DC	0V.
5	6V6GT	-16V. DC	0V.	255V.DC	215V.DC	-13V. DC	-3.4V.DC	6.3V. DC	0V.
6	0Z4 OR 6X5GT	0V.	0V.	310V.AC -30V.DC	-18V.DC	310V.AC -30V.DC	0V.	6.1V. DC	265V.DC

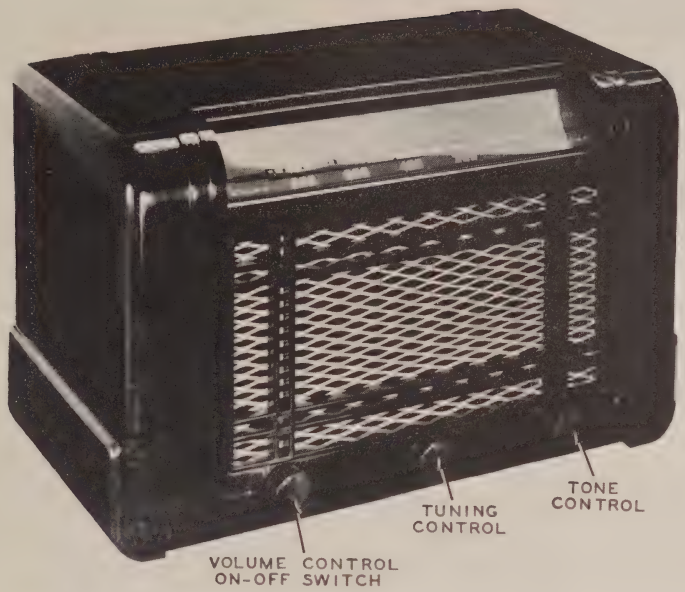
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	0Ω	2.2MEG	0Ω	250KΩ	.25Ω	250KΩ
2	6SA7GT	0Ω	0Ω	250KΩ	250KΩ	42KΩ	.5Ω	.25Ω	2 MEG
3	6SK7GT	0Ω	0Ω	0Ω	1.9MEG	0Ω	250KΩ	.25Ω	250KΩ
4	6SQ7GT	0Ω	4.5MEG	0Ω	875KΩ	480KΩ	720KΩ	.25Ω	0Ω
5	6V6GT	225Ω	0Ω	250KΩ	250KΩ	260KΩ	48Ω	.25Ω	0Ω
6	0Z4 OR 6X5GT	0Ω	0Ω	330Ω	230Ω	510Ω	INF	.25Ω	250KΩ

At the request of the manufacturer stage gain measurements are not included.

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. [illegible]sured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts at battery terminals for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for v[illegible]ge measurements.

TRUETONE
MODEL D2612



TRUETONE
MODEL D2612

TRUETONE D2612

TRADE NAME	Truetone D2612 (Code No. SW-9022-G)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 12SK7 RF Amp., 12SA7 1st Det.-Osc., 12SF7 IF-Det.-AVC, 12SK7 1st AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .235 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to ungrounded term. of A6. Low side to B-.	455KC	Point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with ground lead and decrease dummy antenna to .001 MFD to prevent excessive hum modulation.
300MMFD	High side to ext. ant. clip. Low side to B-.	1600KC	1600KC	"	A5	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	"	"	"	A6,A7	"
"	"	1400KC	Tune in 1400 KC signal.	"	44,45	Adjust slugs for maximum output.
"	"	1600KC	1600KC	"	A6, A7	Recheck adjustments for maximum output.

Remove loop and chassis from cabinet and solder approximately 8" of wire (insulated) to any B- connection. Replace chassis and loop in cabinet or place them in position as they will be in cabinet. Place lead soldered to B- out under back of chassis. To position dial pointer turn tuning control as far clockwise as it will go and dial pointer should be at 1600KC mark on scale. If not release and adjust. Turn volume control to maximum volume position and keep signal generator output low as possible. After adjusting slugs on 44 and 45 apply dab of speaker cement at top of each core to prevent movement.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF	12SK7	12SK7	8N	
2	1stDet.-Osc.	12SA7	12SA7	8R	
3	IF 2nd Det.-AVC	12SF7	12SF7	7AZ	
4	1st Audio	12SK7	12SK7	8N	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No. ●	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	500256	FP306*	DY-40-20-150	EL-24	AF88D	UP3515	■ Filter*
(B)	20	150							▲ "
8	.2	400	502158	TP428	S-4-2	TC-2	434-.2	DT4H2	Line Isolating
9	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
10	.01	400	502151	TP421	S-4-01	TC-11	434-.01	DT4S1	Pwr.Amp.Plate
11	.004	400	502156	TP407	S-6-004	TC-24	484-.004	DT6L4	Audio Coupling
12	.02	400	502152	TP423	S-4-02	TC-12	434-.02	DT4S2	Feedback
13	.05	200	502153	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Plate Decoupling
14	.002	400	502543	TP405	S-6-002	TC-22	434-.002	DT6D2	Audio Coupling
15	.0008	400	502470	MC451	MO.3-38	TC-21	1468-.00075	1W5T6	Tone Control
16	.1	200	502155	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
17	110	500	502160	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
18	110	500	502160	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Filter
19	50	500	502159	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
20	260	500	502271	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling
21	1000	500	502165	MCB455	MW.5-21	MS-21	1467-.001	2R5D1	AVC Filter

*Do not use bypass section.

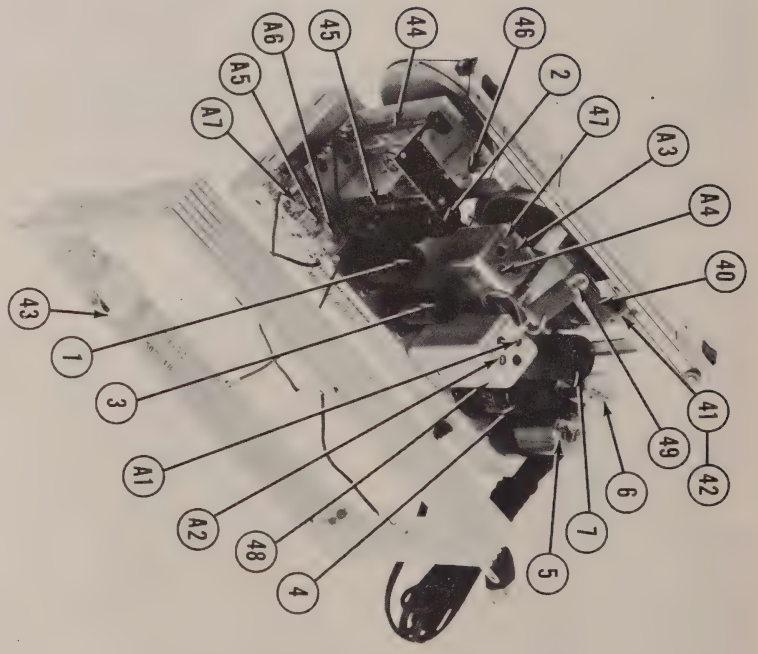
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22(A)	500KΩ	1	502145	MK401	D13-133	AM-60-Z	Volume Control
(B)	Shaft		Not Req.		E	KSS-3	Attach to 22A per instr.
(C)	Switch		"	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
23	390Ω	½	502140	BW-½-390Ω	Or.-Wh.-Br. RF Cathode
24	4700Ω	½	502291	BTS-4700Ω	Yl.-Vi.-Red Plate Load
25	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
26	22KΩ	½	502130	BTS-22K	Red-Red-Or. Osc. Grid
27	47Ω	½	502264	BW-½-47Ω	Yl.-Vi.-Blk. IF Cathode
28	3.3 Meg.	½	502269	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
29	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Diode Load
30	10 Meg.	½	502136	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
31	2200Ω	½	502128	BTS-2200Ω	Red-Red-Red 1st AF Cathode
32	220KΩ	½	502133	BTS-220K	Red-Red-Yl. Plate Load
33	220KΩ	½	502133	BTS-220K	Red-Red-Yl. Decoupling Filter
34	2.2Meg.	½	502135	BTS-2.2Meg.	Red-Red-Grn. Screen Dropping
35	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
36	130Ω	½	502138	BW-½-130Ω	Br.-Or.-Br. Output Cathode
37	1500Ω	1	502469	BTA-1500Ω	Br.-Grn.-Red Filter
38	220KΩ	½	502133	BTS-220K	Red-Red-Yl. Line Isolating
39	33Ω	½	502574	BW-½-33Ω	Or.-Or.-Blk. Ballast

CHASSIS—TOP VIEW



TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA	INSTALLATION NOTES
40	2710Ω	4Ω	242Ω	.8Ω	502213 502904 504244	Note 2	Note 2		Use with R-502998 " " A-502998 " " W-502998
	Note 2 - Primary winding has tap for hum-buck purpose. No listing available.								

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS VC IMP.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
41	FM	4Ω	R-502998 A-502998 W-502998	SF-443* " "		*Original speaker has special bracket In using SF-443 a similar bracket must be made to duplicate speaker positioning.
42	CONE DIA. 5"	VC DIA. 3"	502214 502543 504245	None " "		Use on R-502998 " " A-502998 " " W-502998

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
43	Ant. Loop	0		502646		
44	Ant.	1Ω	7Ω	504210		See Note #3
45	RF .	5Ω		504214		" " "
46	Osc.	5Ω	0	504212		" " "
47	Input IF .	20Ω	20Ω	502102	16-5712	
48	Output IF .	19Ω	19Ω	504103	16-5714	
	Note 3 - Items 44,45 and 46 are obtainable as a complete tuner assembly part No. 504205.					

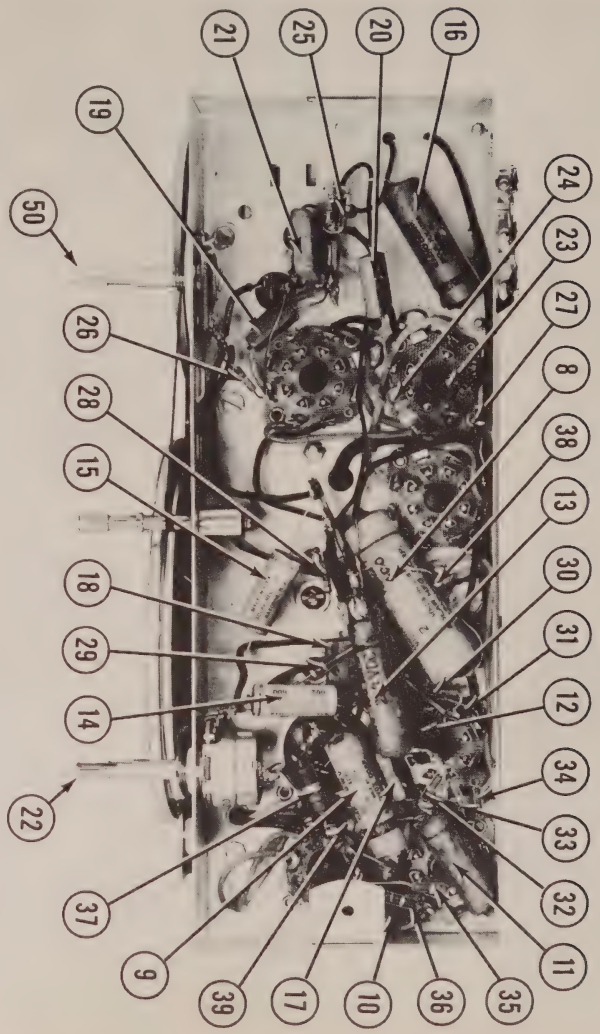
DIAL LIGHT

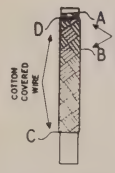
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA	INSTALLATION NOTES
49	Min. Bayonet	6-8	.15	Brown	502473		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
50	Tone Switch	500546	Single Pole Double Throw
A5	Osc. Trimmer	504086	40-370 MMFD
A6	RF Trimmer		40-370 "
A7	Ant. Trimmer		20-270 MMFD "
	Cabinet	502236	Mahogany
	Knob	502551	"
	Dial Pointer	502367	
	Dial Scale	504144	Glass
	Spring	504012	Tuning Slug Drive Cord
	Cabinet Back	502165	

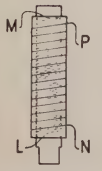
CHASSIS—BOTTOM VIEW





ANTENNA COUPLING COIL
504210

R.F. COIL
504214



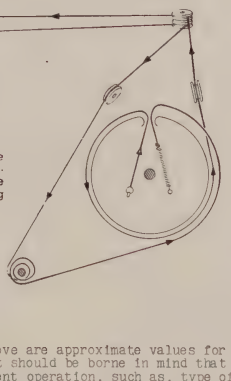
OSCILLATOR COIL
504212

SLUG CORES FOR COILS

ANT.—504211
R.F.—504215
OSC.—504213

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

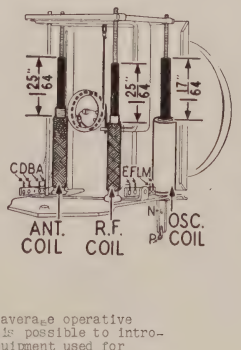
I.F. 455 KC.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

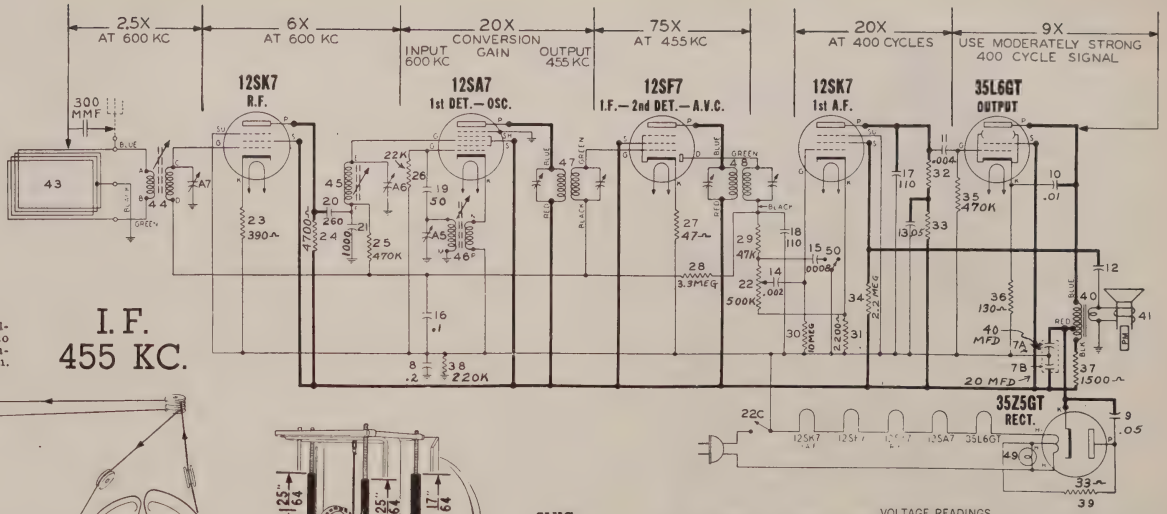
To string dial cord, turn the main drive drum to maximum **counter - clockwise** position and use following parts:

114955 Clip on end of cord
117057 Cord (55 inches)
119087 Ring for dial cord
161384 Tension Spring



SLUG TUNER ASSEMBLY
(Drive Parts)

117057 Cord (8")
114955 Clip on cord
504012 Spring



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0V.	24.6V.AC	0V.	-8V.DC	-57V.DC	92V.DC	36.8V.AC	87V.DC
2	12SA7	0V.	48.5V.AC	77V. DC	92V.DC	-25V.DC	0V.	36.8V.AC	-51V.DC
3	12SF7	0V.	-2V.DC	-1V.DC	92V.DC	-.85V.DC	82V.DC	12V.AC	24.6V.AC
4	12SK7	0V.	0V.	0V.	-2V.DC	-33V.DC	-82V.DC	12V. AC	30V.DC
5	35L6GT	0V.	48.5V.AC	109V.DC	92V.DC	0V.	0V.	86V.AC	56V.DC
6	35Z5GT	0V.	117V.AC	113V.AC	117V.DC	112V.AC	0V.	86V.AC	117V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	195KΩ	27Ω	0Ω	3.3MEG	330Ω	95KΩ	38Ω	85KΩ
2	12SA7	195KΩ	51Ω	95K	95KΩ	24KΩ	.5Ω	38Ω	36MEG
3	12SF7	195KΩ	33MEG	45Ω	95KΩ	550KΩ	95KΩ	13Ω	26Ω
4	12SK7	195KΩ	0Ω	0Ω	7 MEG	22 KΩ	2.3MEG	13Ω	530KΩ
5	35L6GT	195KΩ	51Ω	95KΩ	95KΩ	550KΩ	550KΩ	82Ω	125Ω
6	35Z5GT	INF	115Ω	113Ω	95KΩ	140Ω	0Ω	82Ω	95KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. The following precautions should be observed in making stage gain measurements on this set.

1 - Use the 600KC signal with 400-cycle modulation connected as shown. (Use nearby frequency if local station interferes.)

2 - For RF and IF measurements connect negative terminal of 3-volt battery to AVC lead and positive terminal to B-. IMPORTANT-Disconnect battery when measuring audio stage gains.

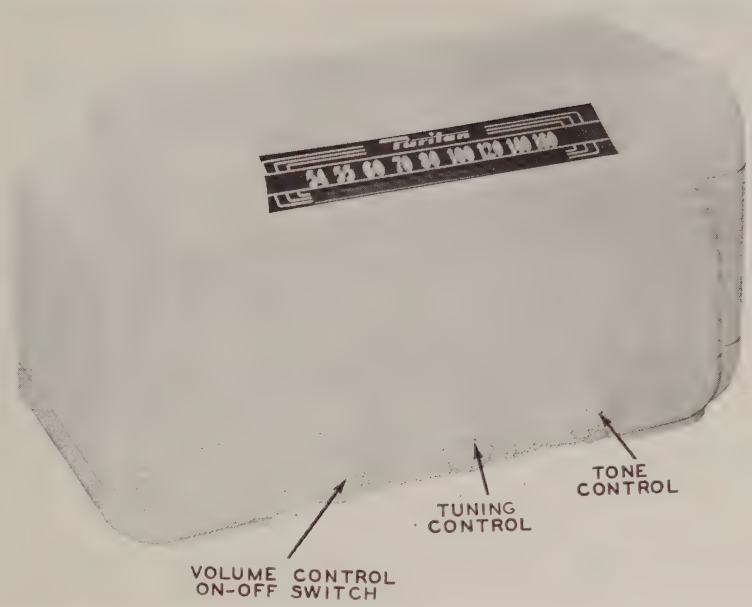
3 - Be sure receiver is carefully tuned to generator signal. (Use weak signal for sharp tuning.)

SERVICE HINT - AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feedback connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the secondary of the output transformer.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PURITAN
MODELS 506, 507



PURITAN MODEL 503

TRADE NAME	Puritan Models 506 (6D15SW) 507 (6D25SW)
MANUFACTURER	The Pure Oil Co., 35 Wacker Drive, Chicago, Illinois
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7 1st Det.-Osc., 12SF7 IF-2nd Det.-AVC, 12SK7 1st AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .235 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to ungrounded term. of A6. Low side to B-.	455KC	Point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer or connect capacitor in series with ground lead and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
300 MMFD	High side to ext. ant. clip. Low side to B-.	1600KC	1600KC	"	A5	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	"	"	"	A6	"
"	"	"	"	"	A7	"
"	"	1400KC	Tune in 1400 KC signal.	"	44	Adjust slug for maximum output
"	"	"	"	"	45	" " " " "
						Recheck adjustments A6 and A7 at 1600KC for maximum output. Apply speaker cement at top of tuning slugs on 44 and 45 after adjustment.

Remove loop and chassis from cabinet and solder approximately 8" of wire (insulated) to any B- connection. Replace chassis and loop in cabinet or place them in position as they will be in cabinet. Place lead soldered to B- out under back of chassis. To position dial pointer turn tuning control as far clockwise as it will go and dial pointer should be at 1600KC. Mark on scale. If not release and adjust. Turn volume control to maximum volume position and keep signal generator output as low as possible. After adjusting slugs on 44 and 45 apply dab of speaker cement at top of each core to prevent movement.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: PURITAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	1st Det.-Osc.	12SA7	12SA7	8R	
3	IF-2nd Det.-AVC	12SF7	12SF7	7AZ	
4	1st AF	12SK7	12SK7	8N	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	8AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PURITAN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	500256	FP306*	DY-40+20-150	EL-24	AF88D	UP4215	■ Filter
B	20	150							"
8	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.02	400	502152	TP423	S-4-02	TC-12	484-.02	DT4S2	Neg. Feedback
10	.01	400	502151	TP421	S-4-01	TC-11	484-.01	DT4S1	3516 Plate Bypass
11	.004	400	502156	TP407	S-6-004	TC-24	484-.004	DT6D4	Audio Coupling
12	.05	200	502153	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Plate Decoup.
13	.0008	400	502470	MC251	MO.3-38	MS-38	1479-.0008	1W5T8	Tone Compensation
14	.002	400	502453	T1405	S-6-002	TC-22	484-.002	DT6D2	Audio Coupling
15	.1	200	502155	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
16	.2	400	502158	TP429	S-4-2	TC-2	484-.1	DT4P2	Line Isolating
17	110	500	502160	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
18	110	500	502160	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
19	50	500	502159	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.
20	1000	500	502165	MC-255	MO.3-21	1FM-21	1468-.001	1W5D1	AVC Filter
21	260	500	502271	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling

*Do not use bypass section.

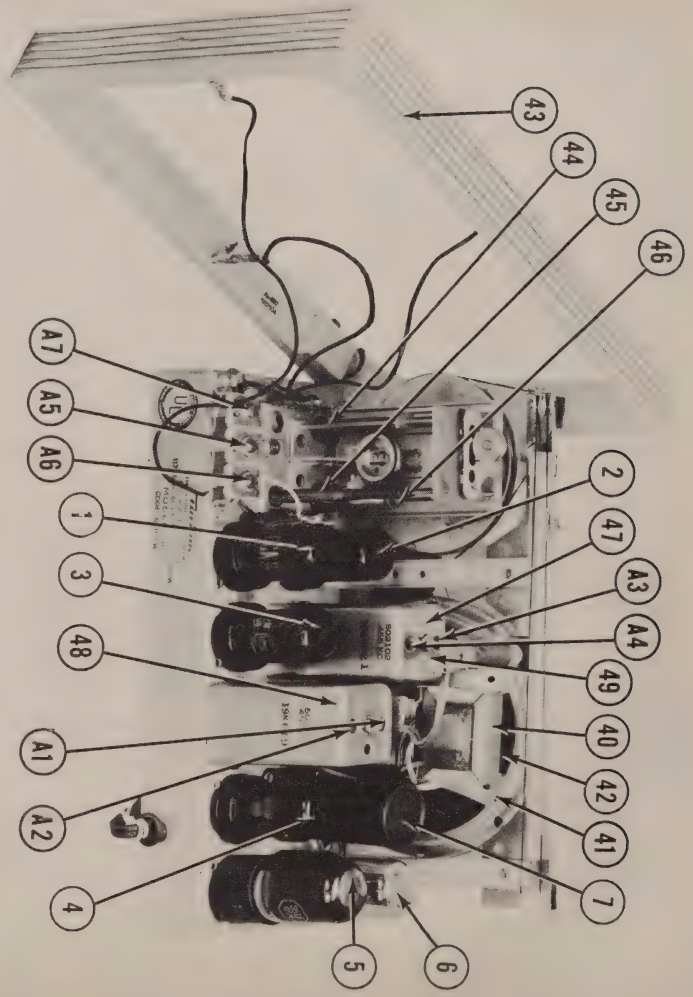
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PURITAN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	1	502145	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	attach to 22A per instructions.
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PURITAN PART No.	IRC PART No.	IDENTIFICATION CODES
23	390Ω	½	502140	BW-½-390	Or.-White-Br. RF Cathode
24	4700Ω	½	502291	BTS-4700	Yl.-Vi.-Red RF Plate Load
25	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
26	22KΩ	½	502130	BTS-22K	Red-Red-Or. Osc. Grid
27	220KΩ	½	502133	BTS-220K	Red-Red-Yl. Line Isolating
28	3.3 Meg.	½	502269	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
29	47Ω	½	502264	BW-½-47	Yl.-Vi.-Blk. IF Cathode
30	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Diode Load
31	10 Meg.	½	502136	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
32	2200Ω	½	502128	BTS-2200	Red-Red-Red 1st AF Cathode
33	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. 1st AF Screen Dropping
34	220KΩ	½	502133	BTS-220K	Red-Red-Yl. 1st AF Plate Load
35	220KΩ	½	502133	BTS-220K	Red-Red-Yl. 1st AF Plate Filter
36	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
37	130Ω	½	502138	BW-½-130	Br.-Or.-Br. Output Cathode
38	1500Ω	1	502469	BTA-1500	Br.-Grn.-Red Filter
39	33Ω	2	502574	BW-2-33	Or.-Or.-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PURITAN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
40	2400Ω	4.1Ω	170Ω Tapped @ 2Ω	.52Ω	504244 502213 502904				Used with R-502998 speaker " " A-502998 "

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	PURITAN PART No.	JENSEN PART No.		
41	PM	4.1Ω	W-502998	ST-101		
42	Cone dia. 4-13/16"	1.2Ω	504245 Voice Coil Assembly Used with W-502998 Speaker. 502214 " " " " " R-502998 " 502403 " " " " " A-502998 "			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	PURITAN PART No.	MEISSNER PART No.	
43	Loop Ant.	[illegible]		[illegible]		
44	Ant. Coil	1Ω	7Ω	504210		Items 44, 45 and 46 can be obtained as complete tuning assembly under part number 504096
45	RF "	6Ω	6Ω	504214		
46	Osc. "	5Ω	0Ω	504212		
47	Input IF	20Ω	20Ω	502102	[illegible]	
48	Output IF	19Ω	19Ω	502103	[illegible]	

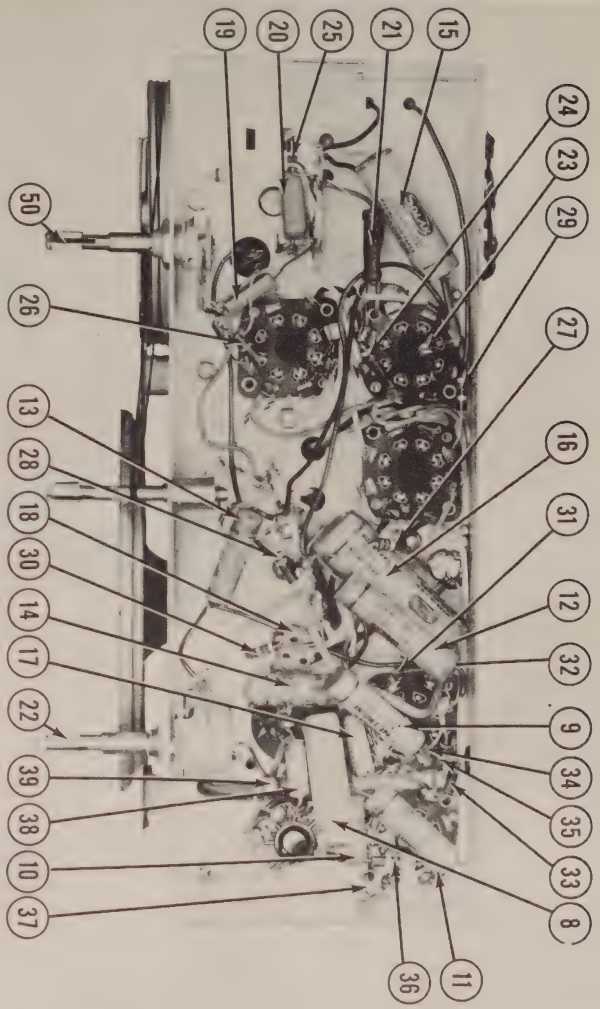
DIAL LIGHT

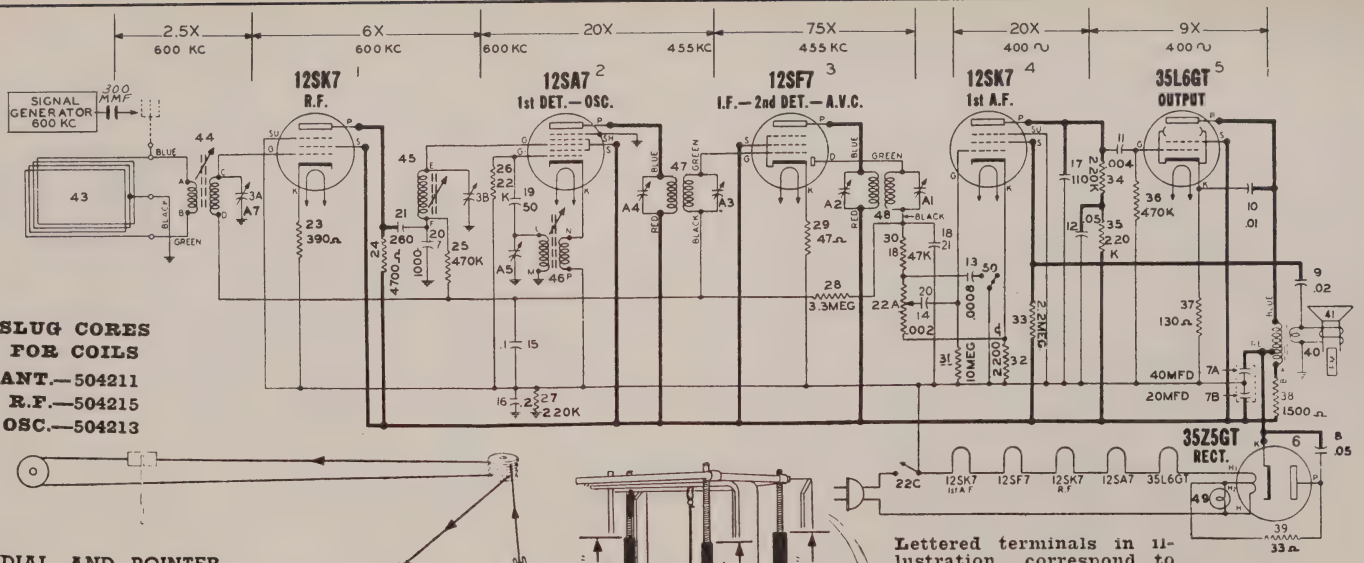
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PURITAN PART No.		
49	Bayonet	3-8	.1A	Brown	[illegible]		Type 47

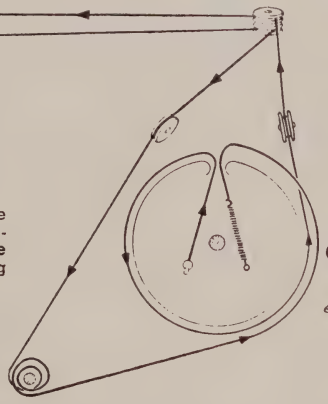
MISCELLANEOUS

ITEM No.	PART NAME	PURITAN PART No.	NOTES
50	Tone Switch	500546	Single Pole Double Throw
A5	Osc. Trimmer		20-270 MMFD
A6	RF Trimmer	504086	20-270 "
A7	Ant. Trimmer		10-160 MMFD
	Cabinet	502476	Ivory (Model 506)
	"	502477	Mahogany (Model 507)
	Knob	502564	Ivory (Model 506)
	"	502563	Mahogany (Model 507)
	Dial Scale	504147	Glass
	" Pointer	502367	
	Cab. Back	502502	

CHASSIS—BOTTOM VIEW



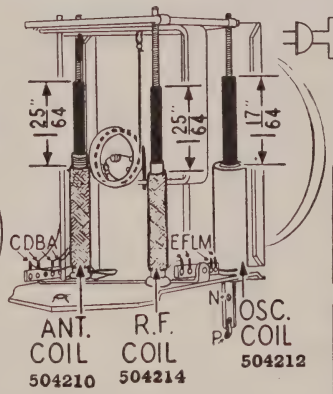




DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, turn the main drive drum to maximum **counter - clockwise** position and use following parts:

114955	Clip on end of cord
117057	Cord (55 inches)
119087	Ring for dial cord
161384	Tension Spring



Lettered terminals in illustration correspond to similarly lettered terminals on the circuit diagram.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	-.02V.DC	24.5V.AC	0V.	-.02V.DC	2.6V DC	76V.DC	37V.AC	58V.DC
2	12SA7	-.02V.DC	50V.AC	76V.DC	76V. DC	-.25V.DC	0V.	37V. AC	-.1 V. DC
3	12SF7	-.02V. DC	-.02V. DC	.5V.DC	76 V. DC	0V.	76V. DC	11.5V.AC	24.5VAC
4	12SK7	-.02VDC	0V.	0V.	.5V. DC	27V.DC	7V. DC	11.5V.AC	35V.DC
5	35L6GT	-.02VDC	50V.AC	112V.DC	92V.DC	0V.	0V.	87V.AC	4.3VDC
6	35Z5GT	0V.	117V.AC	113V.AC	117V. DC	112V.AC	0V.	87V.AC	117V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	198 KΩ	28Ω	0Ω	3.7MEG	375Ω	875 KΩ	41Ω	875KΩ
2	12SA7	198 KΩ	50Ω	875KΩ	875KΩ	24 KΩ	.5Ω	41Ω	4MEG
3	12SF7	198 KΩ	4MEG	44Ω	875 KΩ	470 KΩ	875KΩ	12.5Ω	28Ω
4	12SK7	198 KΩ	0Ω	0Ω	7.5MEG	1.8KΩ	3.3MEG	12.5Ω	875KΩ
5	35L6GT	198 KΩ	50Ω	875 KΩ	875 KΩ	450KΩ	450Ω	80Ω	122Ω
6	35Z5GT	INF	108Ω	105Ω	875KΩ	135Ω	0Ω	80Ω	875KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. The following precautions should be observed in making stage gain measurements on this set.

1 - Use the 600KC signal with 400-cycle modulation connected as shown. (Use nearby frequency if local station interferes.)

2 - For RF and IF measurements connect negative terminal of 3-volt battery to A.V.C lead and positive terminal to b-. IMPORTANT-Disconnect battery when measuring audio stage gains.

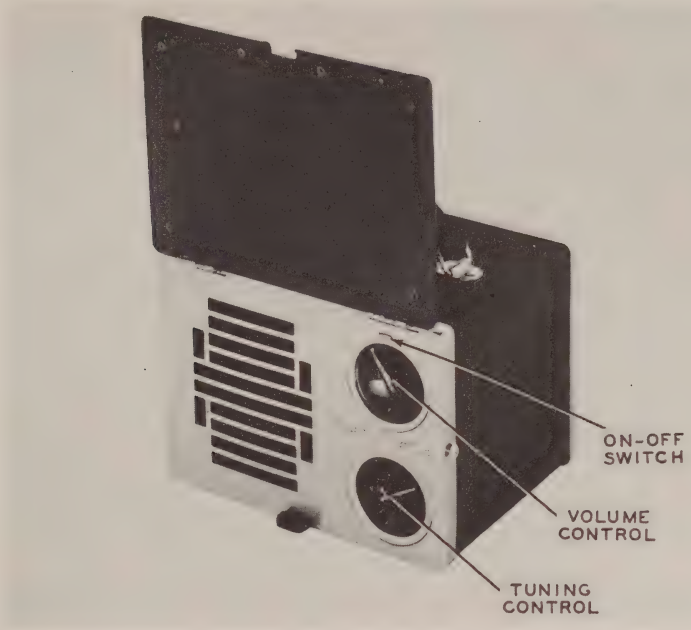
3 - Be sure receiver is carefully tuned to generator signal. (Use weak signal for sharp tuning.)

SERVICE HINT - AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feedback connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under these conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the secondary of the output transformer.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA
MODEL 5A5



MOTOROLA
MODEL 5A5

MOTOROLA MODEL 5A5

TRADE NAME	Motorola Model 5A5 (Chassis HS-15)
MANUFACTURER	Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	Three P wer Portable AC-DC Battery Superheterodyne - Self Contained Loop Antenna
TUBES(FIVE)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output, 117Z3 Rectifier.
POWER SUPPLY	117 Volts AC-DC or 2-1½ Volt "A" Batteries: 67½ Volt "B" Battery .150 Amps. @ 117 Volts AC - .162 Amps. @ 3 Volts plus 9.1 MA @ 67½ V DC
TUNING RANGE—BROADCAST	535-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to antstator section of tuning gang. Low side to chassis.	455KC	High freq. end of dial.	Across voice coil	A1,A2, A3.	Adjust for maximum output. If AC power is used when aligning use isolation transformer or connect isolating capacitor between generator ground lead and receiver chassis. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	"	1600KC	1600KC	"	A4	"
	Loop	1400KC	Tune in 1400 KC signal.	"	A5	Adjust for maximum output. Connect output of generator to loop of few turns wire and radiate signal into loop.
	"	600KC	Tune in 600KC signal.	"	A6	Rock dial and adjust for maximum output. Recheck adjustments at 1600KC and 1400KC on A5 and A6.

Volume control at maximum volume and output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	
5	Rectifier	117Z3	117Z3	4BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	40	150	23A71212	FP407					◓ Filter
B	20	150							■ "
C	20	150							▲ "
D	80	25							"
7	.002	400		TP405	S-6-002	TC-22	484-.002	DTSD2	Voice Coil Bypass
8	.005	100		MT115	TTF1-005			ZY2D6	3S4 Plate Bypass
9	.005	100		MT115	TTF1-005			ZY2D6	Audio Coupling
10	.05	100		MT135	TTF1-05			ZY1S5	RF Bypass Filament
11	.02	100		MT127	TTF1-02			ZN1S2	Grid Return Bypass IF
12A	.05	400							Bypass Block
B	.02	100						ZY1S2	" "
C	.05	100						ZY1S5	" "
D	.02	100						ZY1S2	" "
E	.02	100						ZY1S2	" "
F	.02	100						ZY1S2	" "
G	.02	100						ZY1S2	" "
13	500	500			MMA-1-35			TP5	Audio Coupling
14	100	500			MMA-1-31			TP5	Audio Plate Bypass
15	100	500			MMA-1-31			TP5	RF Bypass Diode

CONTROLS

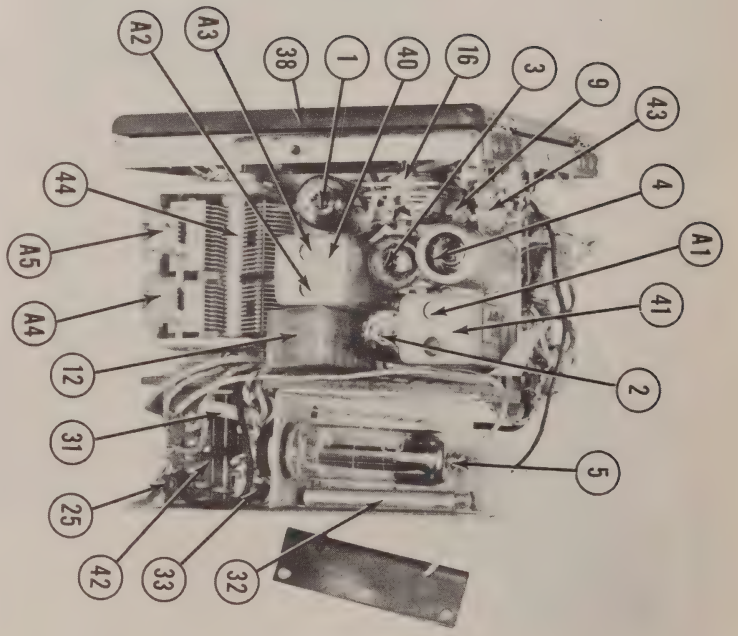
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	1 Meg.	1	18A2491d-C				Volume Control
B	Shaft		Not Req.				

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
17	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Osc. Grid
18	22KΩ	½		BTS-22K	Red-Red-Or. Screen Dropping
19	8.2 Meg.	½		BTS-8.2 Meg	Gray-Red-Grn. IF Grid
20	22KΩ	½		BTS-22K	Red-Red-Or. Screen Dropping
21	3.3 Meg.	½		BTS-3.3 Meg	Or.-Or.-Grn. AVC Network
22	68KΩ	½		BTS-68K	Blue-Gray-Or. Diode Load
23	27Ω	½		BW-½-27	Red-Vi.-Blk. Series Filament
24	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
25	820Ω	½		BTS-820	Gray-Red-Br. Filament String
26	4.7 Meg.	½		BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Screen Dropping
27	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
28	3.3 Meg.	½		BTS-3.3 Meg	Or.-Or.-Grn. Output Grid
29	270Ω	½		BW-½-270	Red-Vi.-Br. Filament String
30	820Ω	½		BTS-820	Gray-Red-Br. Filament String
31	3900Ω	1		BTA-3900	Or.-White-Red Filter
32	2550Ω	10	17A25877-B	ABA-3000*	Filament Dropping
33	27Ω	½		BW-½-27	Red-Vi.-Blk. Rectifier Ballast
34	320Ω	½		BTS-820	Gray-Red-Br. Fixed Bias

*Order with two slides. Adjust 1st slide to 1275Ω and 2nd slide to 2550Ω, not using the total fixed value of the resistor.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
35	11000Ω	3.5Ω	630Ω	1.0Ω					

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	MOTOROLA PART No.	JENSEN PART No.		
36	PM	3.5Ω	50E71061			
	CONE DIA.	VC DIA.				
37	3-5/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

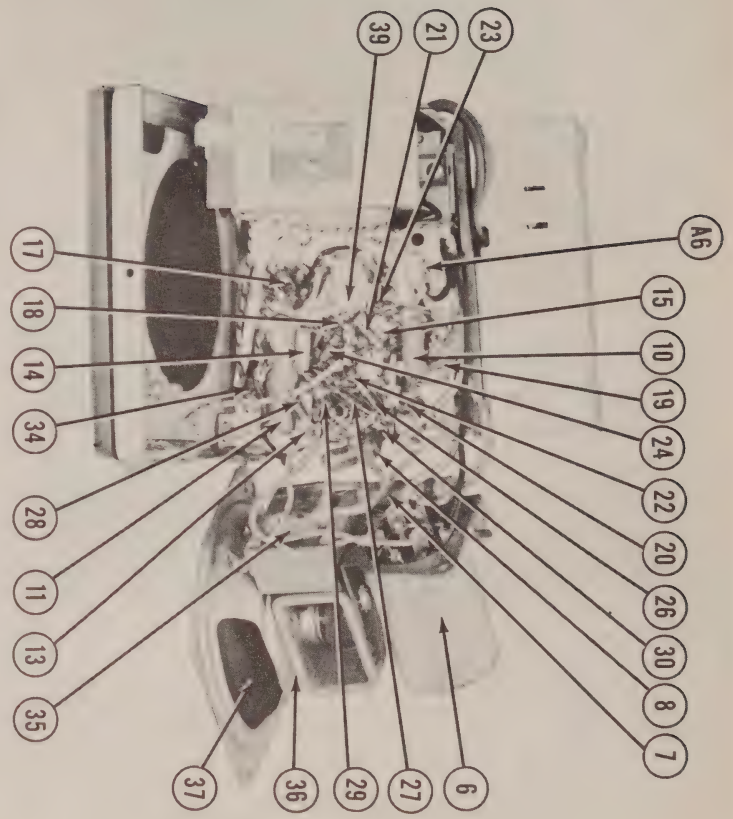
R F COILS

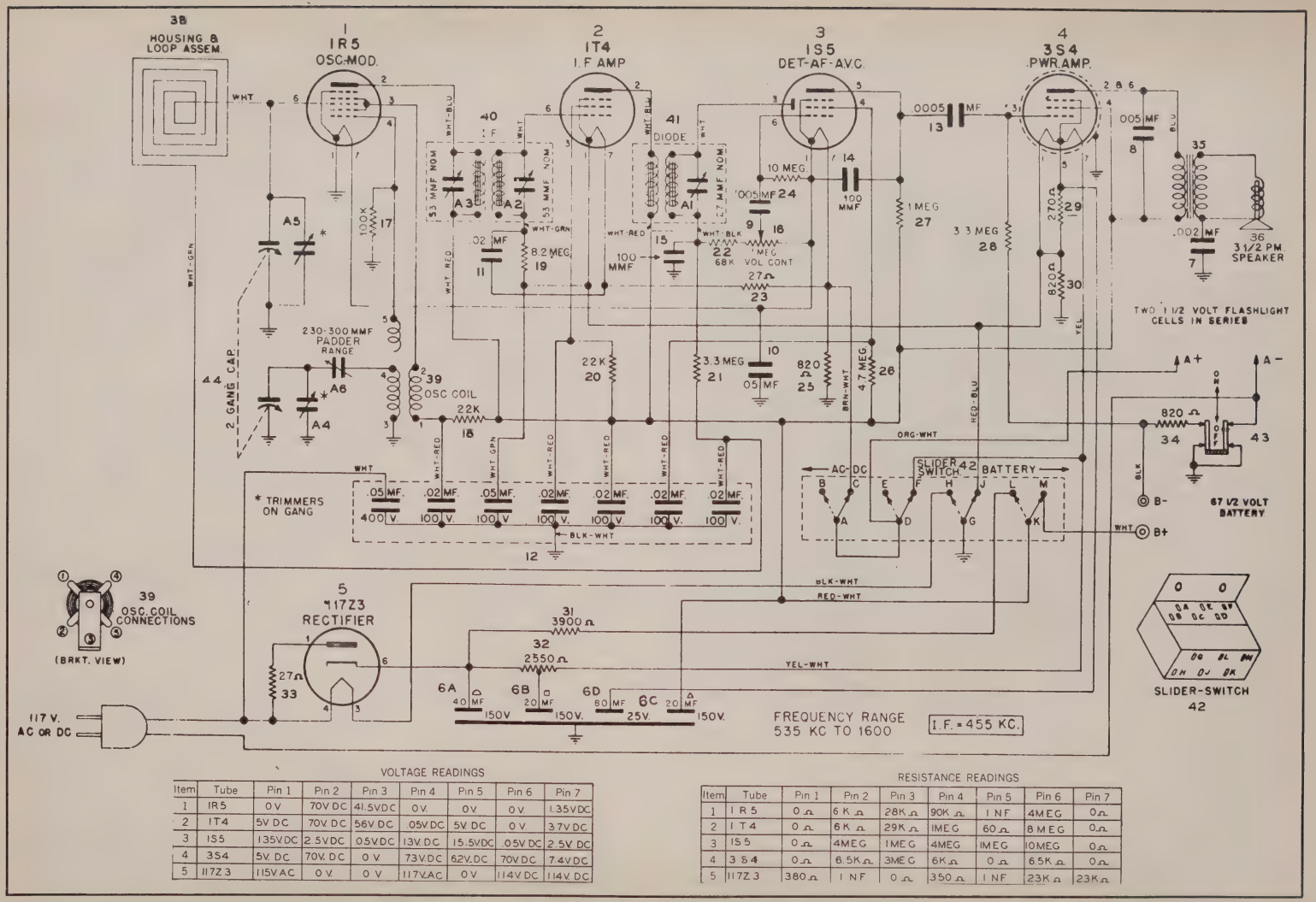
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
38	Loop Ant.	2Ω				
39	Osc. Coil	2.5Ω	12Ω			
40	Input IF	15Ω	15Ω	1X71265		
41	Output IF	17Ω	12.5Ω	1X24886		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
42	Switch		AC-DC Battery
43	"		On-Off
44	Tuning Cap.		2 Gang Variable Cap.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0 V	70V DC	41.5VDC	0 V.	0 V	0 V.	1.35VDC
2	1T4	5V DC	70V DC	56V DC	05V DC	5V DC	0 V	3.7V DC
3	1S5	1.35VDC	2.5VDC	0.5VDC	13V DC	15.5VDC	0.5V DC	2.5V DC
4	3S4	5V. DC	70V. DC	0 V	73V.DC	62V.DC	70V DC	7.4V DC
5	117Z3	115V.AC	0 V.	0 V	117V.AC	0 V	114V DC	114V DC

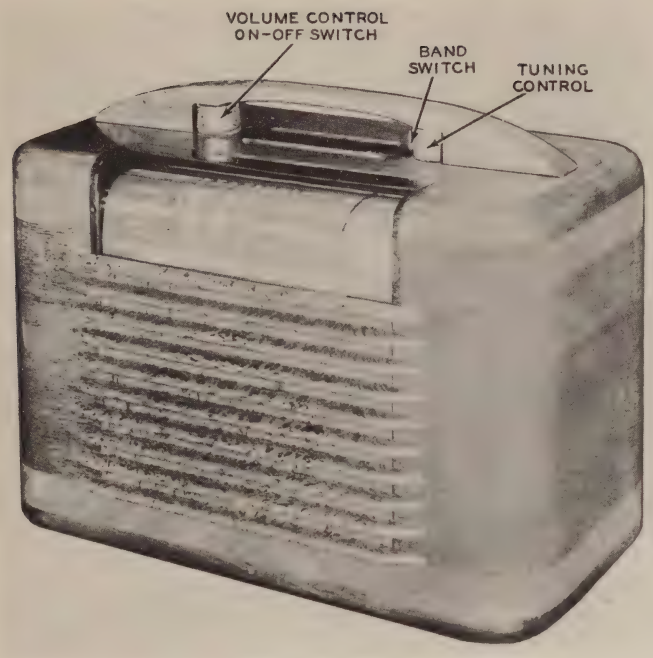
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	6KΩ	28KΩ	90KΩ	1 NF	4MEG	0Ω
2	1T4	0Ω	6KΩ	29KΩ	1MEG	60Ω	8MEG	0Ω
3	1S5	0Ω	4MEG	1MEG	4MEG	1MEG	10MEG	0Ω
4	3S4	0Ω	6.5KΩ	3MEG	6KΩ	0Ω	6.5KΩ	0Ω
5	117Z3	380Ω	1 NF	0Ω	350Ω	1 NF	23KΩ	23KΩ

Reference stage gain measurements are not included at the request of the manufacturer.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PACKARD-BELL
MODEL 651



PACKARD-BELL MODEL 651

TRADE NAME	Packard-Bell Model 651
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, California
TYPE SET	AC 2 Band Superheterodyne - Self Contained Loop Antenna
TUBES(SIX)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6K6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC Rating .320 Amps. @ 117 V AC
TUNING RANGE—BROADCAST	540-1740KC SHORT WAVE 5.7-18.2MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD	High side to pin #8 (grid) of 6SA7. Low side to chassis.	455KC	BC	550KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
"	High side to pin #4 of 6SK7. Low side to chassis.	"	"	"	"	A5	Adjust for minimum output
	Loop	1750KC	"	1750KC	"	A6	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.
	"	600KC	"	600KC	"	A7	"
	"		"		"	A6,A7.	Repeat A6 and A7.
400Ω res.	High side to SW Ant. Lead. Low side to chassis.	18.2MC	SW	18.2MC	"	A8	Adjust for maximum output
"	"	15MC	"	15MC	"	A9	" " " "

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. Move loop to one side to gain access to IF adjustments and return to original position for A6 and A7 adjustments.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PACKARD-BELL PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PACKARD-BELL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.		
7	40	350	24004b	TC78	M-40-450	†	PRS450-40	BR4045		Filter
8	20	350	24003	TC65	M-20-450	UT-203	PRS450-20	BR2045		"
9	.005	600	23004	TP408	S-6-005	TC-25	684-.005	DT6D5		6K6 Plate Bypass
10	.02	600	23007	TP412	S-6-02	TC-12	684-.02	DT6S2		Audio Coupling
11	.005	600	23004	TP408	S-3-005	TC-25	684-.005	DT6D5		" "
12	.05	600	23009	TP415	S-6-05	TC-15	684-.05	DT6S5		AVC Filter
13	.05	600	23009	TP415	S-6-05	TC-15	684-.05	DT6S5		Screen Bypass
14	.05	600	23009	TP415	S-6-05	TC-15	684-.05	DT6S5		AVC Filter *
15	220	500	23206	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25		Audio Plate Bypass
16	220	500	23206	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25		RF Bypass Vol. Cont.
17	47	500	23225	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5		Osc. Grid Cond.
18	100	500	23227	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1		RF Coupling
19	5100		23230	MC465	MW.5-25	1FM-25	1467-.005	1D5D5		Fixed Padder

†Parallel two type UT-203 capacitors.
*Used in initial production only.

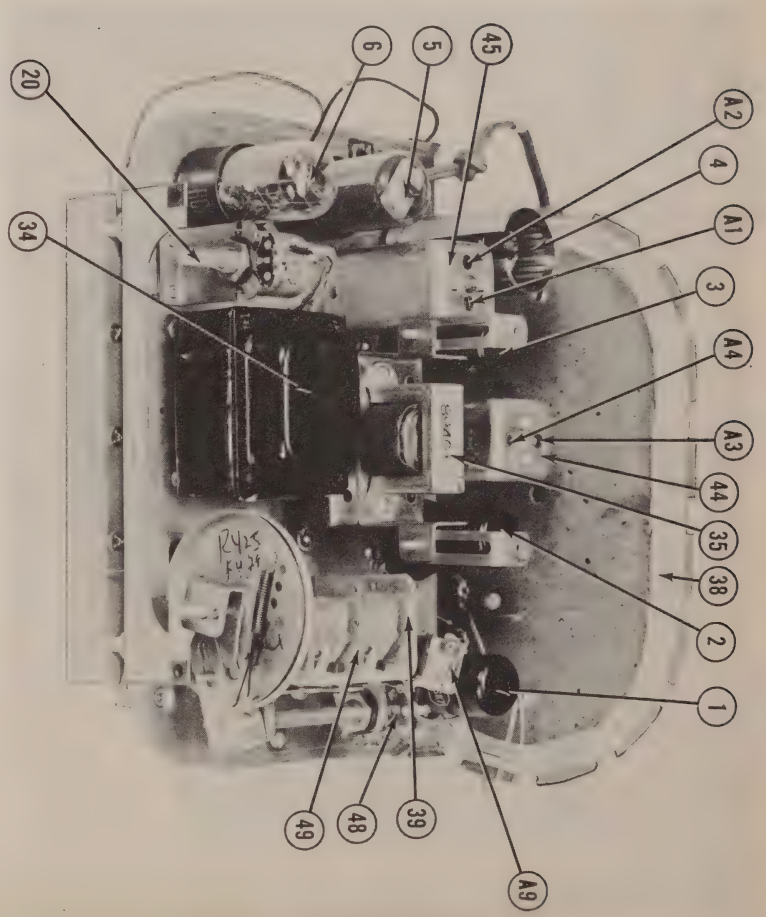
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PACKARD-BELL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
20(A)	5.0KΩ	1	25003A	MR48	D13-133	M-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions.
(C)	Switch		" "	M23	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PACKARD-BELL PART No.	IRC PART No.	
21	39Ω	½	73008	BW-½-39	Or.-White-Blk. RF Cathode
22	4700Ω	½	73033	BTS-4700	Yl.-Vi.-Red RF Plate Load
23	10KΩ	½	73037	BTS-10K	Br.-Blk.-Or. Grid Load
24	22KΩ	½	73041	BTS-22K	Red-Red-Or. Osc. Grid
25	2.2 Meg.	½	73055	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	270Ω	½		BW-½-270	Red-Vi.-Br. IF Cathode
27	4.7 Meg.	½	73057	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
28	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
29	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
30	270Ω	1	73074	BW-1-270	Red-Vi.-Br. Fixed Bias
31	1000Ω	2	73126	BT-2-1000	Br.-Blk.-Red Filter
32	2700Ω	1	73079	BTA-2700	Red-Vi.-Red Filter
33	47Ω	½	73009	BW-½-47	Yl.-Vi.-Blk. SW Osc.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PACKARD-BELL PART No.	STANCOR PART No.	THORDARSON PART No.	
34	117V. @ .320A.	410V @ .050A.	5.8V @ 2.3A.		89001A	P-8120	T-12R20	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PACKARD-BELL PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
35	4400Ω	3Ω	600Ω	.56Ω	89401B	A-3878	T-13S39		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PACKARD-BELL PART No.	JENSEN PART No.		
36	FIELD	VC IMP.	3320Ω	ST-105		
	PM	2.2Ω				
37	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
	4-5/16"	1/2"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	PACKARD-BELL PART No.	MEISSNER PART No.	
38	Loop Ant.	.2Ω	1.8Ω	29302C		
39	SW Ant. Coil		0Ω	29402		
40	Peaking Coil	3Ω		29006		Part Number Includes 5700Ω .5 Watt Resistor
41	Wave Trap Coil	52Ω		29005		
42	BC Osc.Coil	.5Ω	5.5Ω	29204A		Wound On Same Form With SW Osc. Coil
43	SW Osc.Coil	0Ω		29204A		" " " " " " "
44	Input IF	17Ω	16.5Ω	29004D	16-3656	
45	Output IF	16Ω	16Ω	29001D	16-3660	

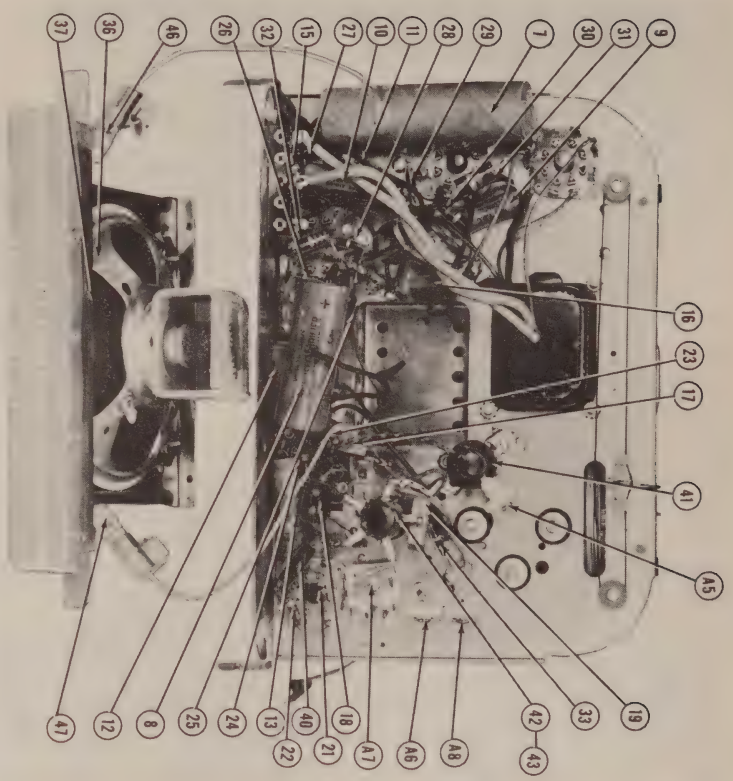
DIAL LIGHT

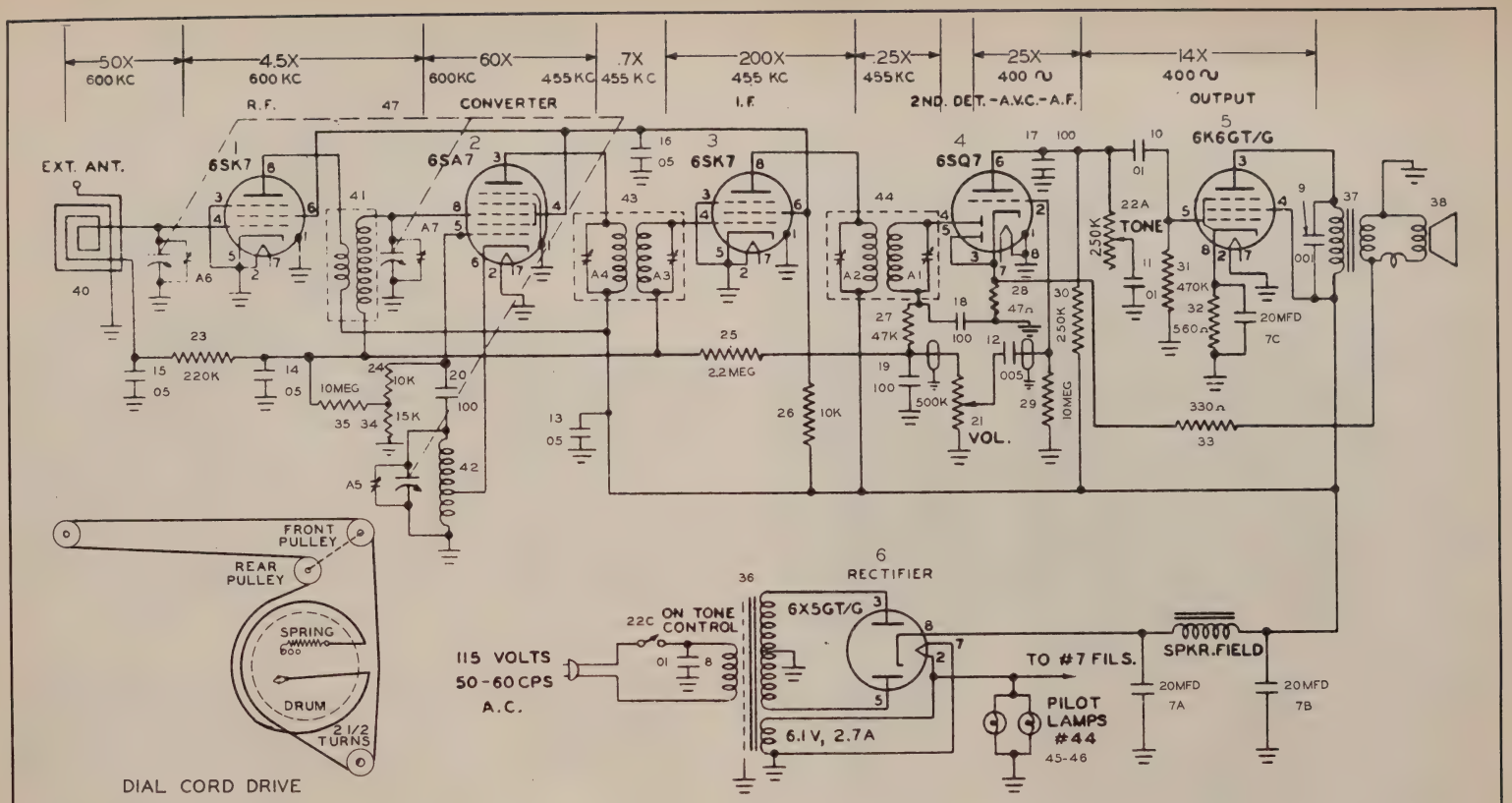
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PACKARD-BELL PART No.		
46	Bayonet	6-8	0.15	Brown	54002		Type 47
47	"	6-8	0.15	Brown	54002		" "

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
48	Band Switch	86002C	
49	Tuning Cap.	23504D or 23510	2 Gang Variable Cap.
A5	Trimmer	23403A	IF Wave Trap Adj. 3-50 MMF.
A6	"	23403A	BC Osc. Trimmer 3-50 MMF.
A7	"	23404A	BC Osc. Padder 300-850MMF.
A8	"	23403A	SW Osc. Trimmer 3-50 MMF.
A9	"	23403A	SW Antenna Trimmer 3-50 MMF.
	Dial Scale	38026A	Stationized
	" "	38007	Export
	Knob	C52008D	Plastic-Walnut
	"	A52008D	" -Bleach
	Handle	A494045	" -walnut
	"	B49404E	" -Bleach
	Cabinet	A21003D	Wood - walnut
	"	B21003D	" - Bleached

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	0V.	0V.	73V.DC	6V.AC	212V.DC
2	6SA7	0V.	0V.	212V.DC	73V.DC	-4.1V.DC	0V.	6V.AC	-.4V.DC
3	6SK7	0V.	0V.	0V.	-.4V.DC	0V.	73V.DC	6V.AC	212VDC
4	6SQ7	0V.	-52V.DC	0V.	-22V.DC	0V.	97V.DC	6V.AC	0V.
5	6K6GT	0V.	0V.	200V.DC	217V.DC	0V.	320V.DC	6V.AC	14.5V.DC
6	6X5GT	0V.	6V.AC	245V.AC	0V.	245V.AC	0V.	0V.	325V.DC

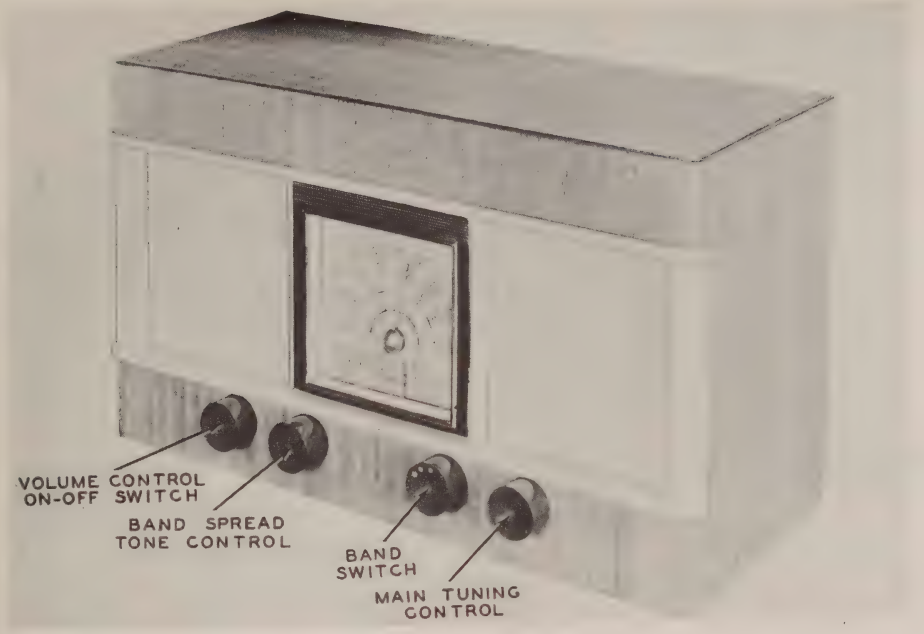
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	2.2MEG	0Ω	86KΩ	0Ω	86KΩ
2	6SA7	0Ω	0Ω	86KΩ	86KΩ	26KΩ	.4Ω	0Ω	1.9MEG
3	6SK7	0Ω	0Ω	0Ω	1.9MEG	0Ω	86KΩ	0Ω	86KΩ
4	6SQ7	0Ω	10MEG	39Ω	560KΩ	39Ω	340KΩ	0Ω	0Ω
5	6K6GT	0Ω	0Ω	86KΩ	86KΩ	520K	86KΩ	0Ω	520Ω
6	6X5GT	0Ω	0Ω	140Ω	INF	140Ω	INF	0Ω	86KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ECHOPHONE
MODEL EC-113



ECHOPHONE
MODEL EC-113

ECHOPHONE MODEL EC-113

TRADE NAME	Echophone Model EC-113
MANUFACTURER	The Hallicrafters Co., 2611 South Indiana Ave., Chicago, Ill.
TYPE SET	AC-DC 3 Band Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SA7GT Converter, 12SK7GT 1st IF Amp., 12SK7GT 2nd IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .260 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1625KC SHORT WAVE 2.2-7.1MC 6.9-22MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	BC counter-clock-wise.	Low freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output Use isolation transformer if available. If not, connect isolating capacitor between generator ground lead and B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200MMFD	High side to ant. post. Low side to ground post.	1600KC	"	1600KC	"	A5	Adjust for maximum output
"	"	1400KC	"	Tune in 1400 KC signal.	"	A6	" " " "
"	"	600KC	"	Tune in 600KC signal.	"	A7	Rock dial slightly and adjust for maximum output. Recheck A5 and A6 adjustments as given.
400Ω carbon res.	"	5MC	SW center	5MC	"	A8	Adjust for maximum output
"	"	"	"	"	"	A9	" " " "
"	"	20MC	SW clock-wise	20MC	"	A10	" " " "

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ECHOPHONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ECHOPHONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	45B095-2	3N533	BB-40+30-150	TA-430		EZ44315C	Filter - Red
B	30	150		LTC48	20-25	TA-230			" - Yellow
C	30	150			M-30-150				" - "
D	20	25							" - Blue
8	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	Line Filter
9	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	35L6 Plate Bypass
10	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
11	.005	600		TP408	S-6-005	TC-25	684-.005	DT6D5	" "
12A	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	Tone Compensation
B	.005	600		TP408	S-6-005	TC-25	684-.005	DT6D5	" " *
13	.001	600		TP404	S-6-001	TC-21	684-.001	DT6D1	"
14	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	AVC Filter
15	.05	600		TP415	S-6-05	TC-15	684-.05	DT6S5	Line Isolating
16	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	Cath. Bias Bypass
17	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	RF Plate Bypass
18A	.005	600		TP408	S-6-005	TC-25	684-.005	DT6D5	IF Coupling
B	100	500		MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	" " *
19	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	Ant. Coupling
20	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	Ext. Grd. Isolation
21	220	500		MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
22	100	500		MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Vol. Cont.
23	100	500		MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	IF Coupling
24	47	500		MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.
25	100	500		MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Coupling
26	2400	500							Fixed Padder Osc. SW
27	4300	500							" " " "

*Used in some models

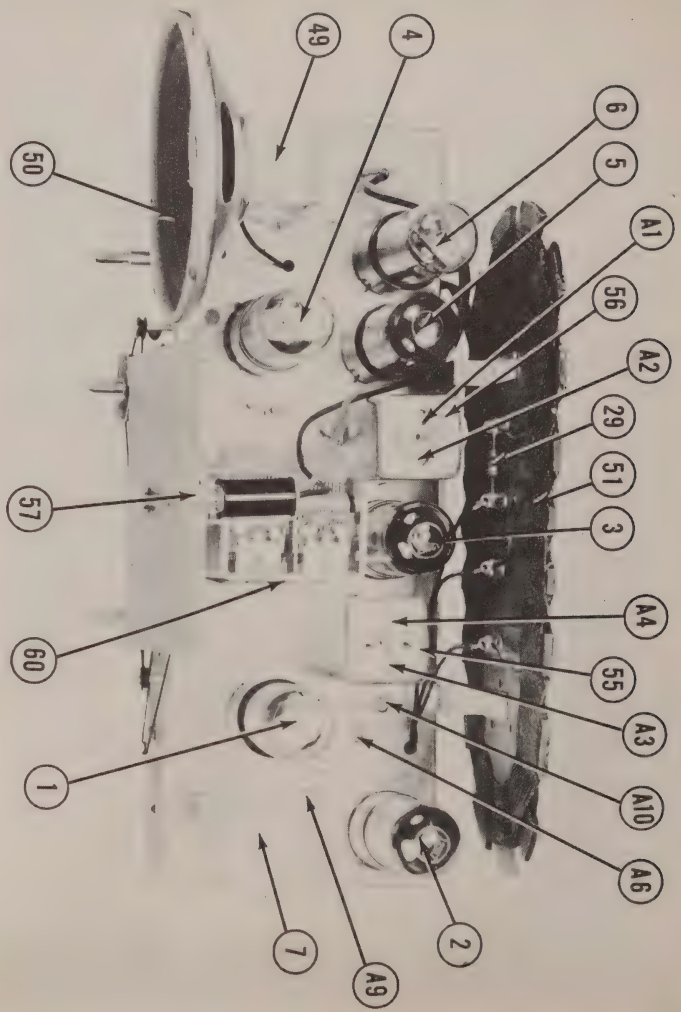
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ECHOPHONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28A	2.2 Meg	1	25-561(653	TM-248		AT-119	Volume Control
B	Shaft		Not Req.	S8-25		KSN-3	Attach to 28A per instructions
C	Switch		" "	M26		SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ECHOPHONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
29	1000Ω	½		BTS-1000	Br.-Blk.-Red Ant. Loading
30	1 Meg.	1		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
31	22KΩ	1		BTS-22K	Red-Red-Or. Osc. Grid
32	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Converter Bias
33	1000Ω	½		BTS-1000	Br.-Blk.-Red Plate Filter
34	4700Ω	1		BTS-4700	Yl.-Vi.-Red IF Plate Load
35	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. IF Grid
36	330KΩ	1		BTS-330K	Or.-Or.-Yl. Line Isolating
37	2.2 Meg.	1		BTS-2.2 Meg	Red-Red-Grn. AVC Network
38A	22KΩ	1		BTS-22K	Red-Red-Or. Tone Compensation-Used in early prod.
38B	47KΩ	1		BTA-47K	Yl.-Vi.-Or. Tone Compensation-Used in later prod.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONTINUED)

39	470KΩ	½	ETS-470K	Yl.-Vi.-Yl. Diode Load
40	10 Meg.	1	ERT-10 Meg.	Br.-Blk.-Blue 1st AF Grid
41	470KΩ	1	ETS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
42	470KΩ	½	ETS-470K	Yl.-Vi.-Yl. Output Grid
43	150Ω	½	BW-½-150	Br.-Grn.-Br. Output Cathode
44A	680Ω	1	BTA-680	Blue-Gray-Br. Filter-Used in early prod.
44B	470Ω	1	BTA-470	Yl.-Vi.-Br. Filter-Used in later prod.
45A	220Ω	2	BW-2-220	Red-Red-Br. Filter-Used in early prod.
45B	680Ω	2	BT-2-680	Blue-Gray-Br. Filter-Used in later prod.
46	22Ω	2	BW-2-22	Red-Red-Blk. Surge Limiter
47	220Ω	1	BW-1-220	Red-Red-Br. Pilot Light Shunt

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	IMPEDANCE		DC RES.		ECHOPHONE PART No.	STANCOR PART No.	THORDAR'N PART No.	
	PRI.	SEC.	PRI.	SEC.				
48	1640Ω	3.65Ω	245Ω	.75Ω		A-3876	T-14862	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	ECHOPHONE PART No.	JENSEN PART No.		
49	PM	3.65Ω		ST-105*		*Fabricate new mounting bracket
	CONE DIA.	VC DIA.				
50	4"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ECHOPHONE PART No.	MEISSNER PART No.	
51	Loop Ant.	.1Ω	1Ω			
52A	Band 2 Ant.	.3Ω	1.2Ω			Bands 2 and 3 on same form
52B	" 3 "	.1Ω	.3Ω			
53	" 1 osc.		5.1Ω			" " " " " "
54A	" 2 "		1Ω			
54B	" 3 "	.1Ω	0Ω			
55	Input IF	9.1Ω	9Ω	508196-5	10-6556	
56	Output IF	24Ω	24Ω	508196-2	10-6600	

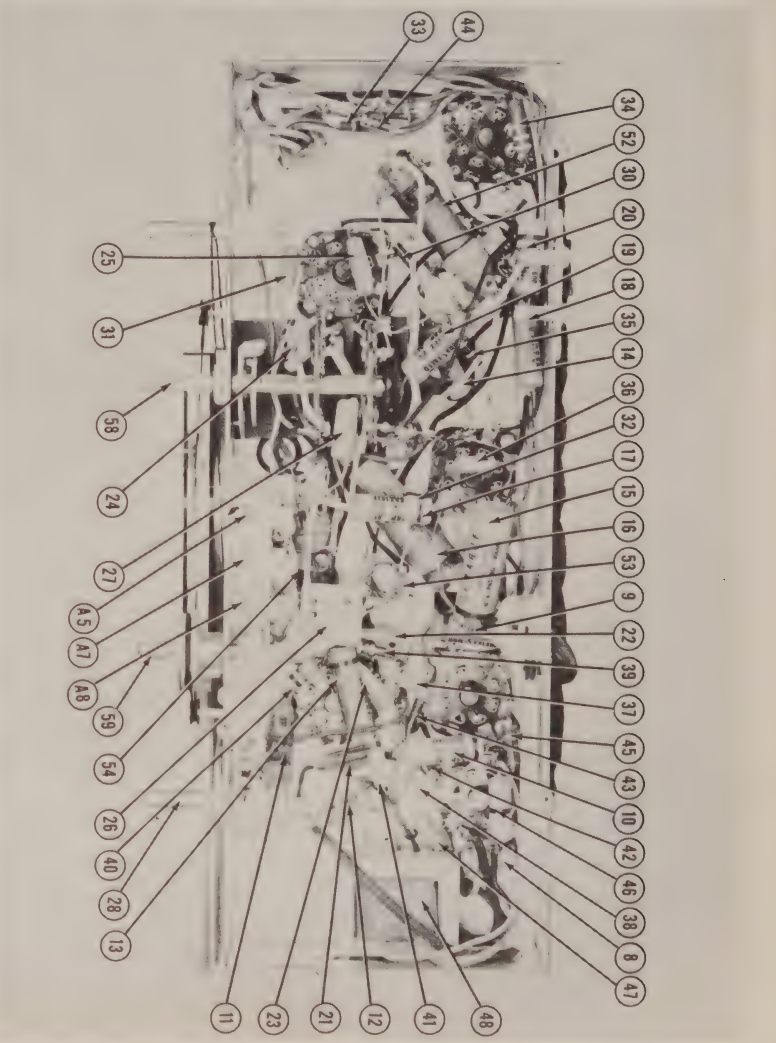
DIAL LIGHT

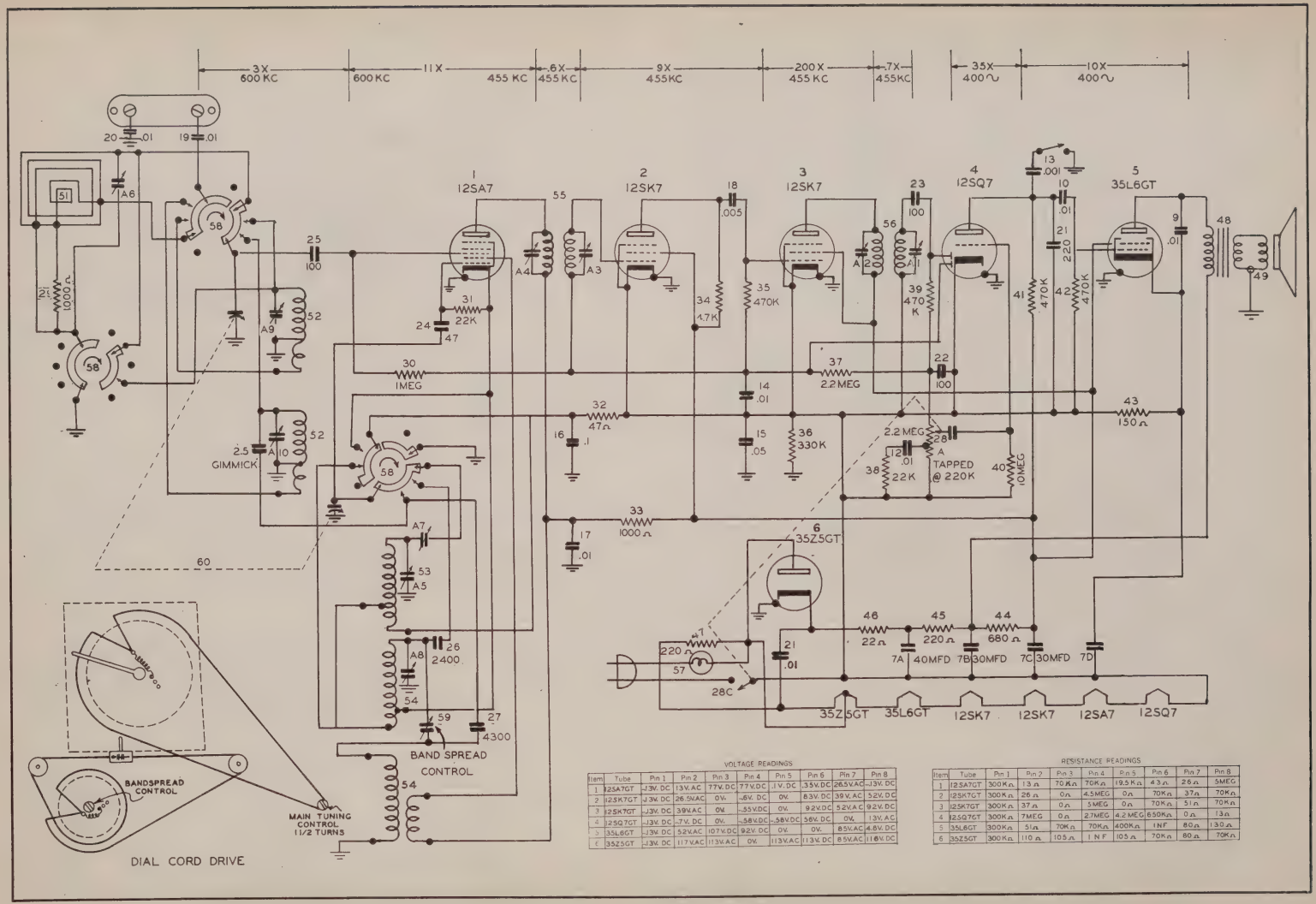
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ECHOPHONE PART No.		
57	Bayonet	6-8	0.1A	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	ECHOPHONE PART No.	NOTES
58	Band Switch		
59	Band Spread & Tone Control		
60	Tuning Cap.		2 Gang Variable Cap.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

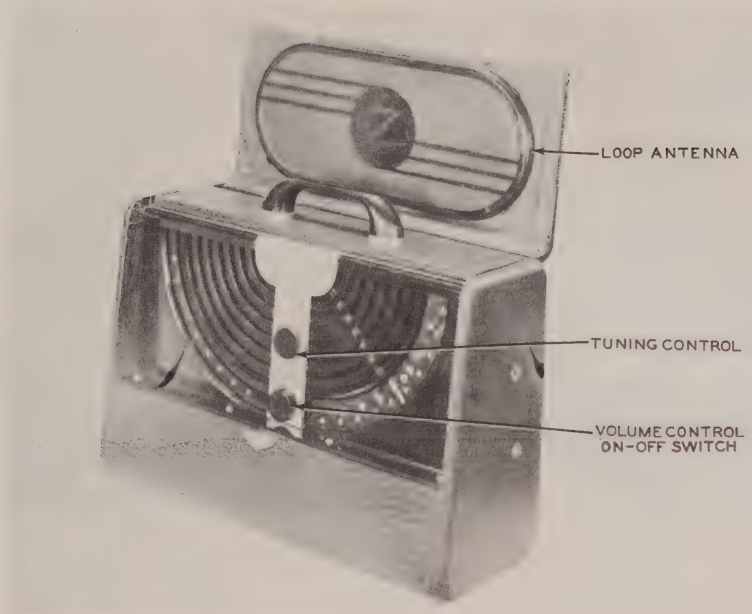
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	-1.3V. DC	1.3V. AC	77V. DC	77 V. DC	1 V. DC	1.35V. DC	265 V. AC	-1.3V. DC
2	12SK7GT	-1.3V. DC	26.5VAC	0V.	-.6V. DC	0V.	83 V. DC	39 V. AC	52V. DC
3	12SK7GT	-1.3V. DC	39V.AC	0V.	-.55 VDC	0V.	92 V. DC	52 V. AC	92 V. DC
4	12SQ7GT	-1.3V. DC	-7 V. DC	0V.	-.58 VDC	-.58 VDC	58 V. DC	0V.	1.3 V. AC
5	35L6GT	-1.3V. DC	52VAC	107 V. DC	92 V. DC	0V.	0V.	85 V. AC	4.8 V. DC
6	35Z5GT	-1.3V. DC	117 V. AC	113 V. AC	0V.	113 V. AC	113 V. DC	85 V. AC	116 V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	300 K Ω	1.3 Ω	70 K Ω	70 K Ω	19.5 K Ω	4.3 Ω	25 Ω	5 MEG
2	12SK7GT	300 K Ω	25 Ω	0 Ω	4.5 MEG	0 Ω	70 K Ω	37 Ω	70 K Ω
3	12SK7GT	300 K Ω	37 Ω	0 Ω	5 MEG	0 Ω	70 K Ω	51 Ω	70 K Ω
4	12SQ7GT	300 K Ω	7 MEG	0 Ω	2.7 MEG	4.2 MEG	630 K Ω	0 Ω	1.3 Ω
5	35L6GT	300 K Ω	5 Ω	70 K Ω	70 K Ω	400 K Ω	1 NF	80 Ω	130 Ω
6	35Z5GT	300 K Ω	110 Ω	105 Ω	1 NF	105 Ω	70 K Ω	80 Ω	70 K Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



ZENITH
MODELS 6G001, 6G001Y

ZENITH
MODELS 6G001, 6G001Y

ZENITH MODEL 6G001Y

TRADE NAME	Zenith Models 6G001, 6G001Y (Chassis No. 6C40)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	Three Power Portable AC - DC battery Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 1LN5 RF Amp., 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-Amp., 3Q5GT Power Amp., 117Z6GT Rectifier.
POWER SUPPLY	117 Volts AC-DC or 90 Volts "B" Supply & 9 Volts "A" Supply in Pack Form
RATING	.170 Amps. @ 117V AC - .050 Amps @ 9V DC plus .016 Amps. @ 90V DC
TUNING RANGE—BROADCAST	535-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to lug on top of center section of tuning gang. Low side to B-.	455KC	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used instead of battery use isolation transformer or connect isolating capacitor in series with grnd. lead from generator. Decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1600KC	1600KC	"	A5	Adjust for maximum output. Connect output of signal generator to loop of 2 turns of wire and radiate signal into wave magnet.
	"	1400KC	1400KC	"	A6	"
	"	"	"	"	A7	"

Remove chassis from cabinet and arrange units so wave magnet may be plugged in. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LN5	1LN5	7AQ	
2	Converter	1LA6	1LA6	7AK	
3	IF Amp.	1LN5	1LN5	7AQ	
4	Det.-Amp.	1LH4	1LH4	5AG	
5	Power Amp.	3Q5GT	3Q5GT	7AP	
6	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	22-1443	FP304	DY-3X40-150/20-25	EL-432*		UP6CJ44	▲ Filter
B	20	150							▲ "
C	40	150		TC48					■ "
D	200	10			DGM-100-12	UHC-212		BRH1225	Filter
8	.05	200	22-1017	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.006	600	22-458	TP409	S-6-006	TC-26	684-.006	DT6D6	3Q5 Plate Bypass
10	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
11	.002	600	22-492	TP405	S-6-002	TC-22	684-.002	DT6D2	" "
12	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Grid Cap.
13	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.15	200	22-1025	TP417	S-4-2	TC-2	484-.15	DT4P2	Filament Bypass
15	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
16	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	Conv. Screen Bypass
17	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Fil. Bypass
18	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Grid Cap.
19	150	500	22-470	MC226	MO.5-315	1FM-315	1468-.00015	5W5T15	Audio Plate Bypass
20	250	500	22-182	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling

*Bypass section not used

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	1 Meg.	1	63-1231	MK402†	D13-137†	AM-63-Z†	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

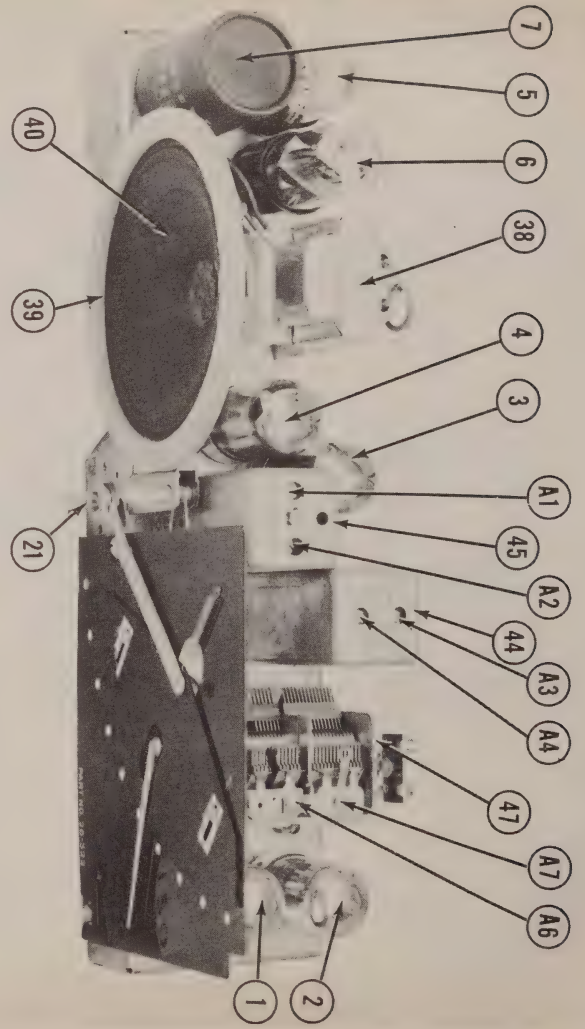
†Insert spacer washers behind mounting bracket to allow clearance for indicator bushing.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
22	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. RF Grid Return
23	22KΩ	½	63-644	BTS-22K	Red-Red-Or. RF Plate Load
24	470KΩ	½	63-719	BTS-470K	Yl.-Vi.-Yl. AVC Network
25	180KΩ	½	63-773	BTS-180K	Br.-Gray-Yl. Osc. Grid
26	47KΩ	½	63-713	BTS-47K	Yl.-Vi.-Or. Screen Dropping
27	220Ω	½	63-579	BW-½-220	Red-Red-Br. Parasitic Suppressor
28	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	4.7 Meg.	½	63-602	BTS-4.7 Meg.	Yl.-Vi.-Grn. IF Grid
30	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
31	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
32	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
33	330Ω	½	63-580	BW-½-330	Or.-Or.-Br. Filament Shunt
34	870Ω	1	63-1079		Gray-Vi.-Br. Filament Shunt
35	1500Ω	½	63-418	BTS-1500	Br.-Grn.-Red Filter
36A	950Ω	3	63-1365	AB-1000	Filter
B	950Ω	3		AB-1000	"
37	140Ω	2	63-1366	BW-1-270(2 Req.)	" -See Note 1

Note 1 - Connect the two (2) BW-1-270 IRC Resistors in parallel

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
38	8200Ω	3.2Ω	650Ω	.65Ω	Part of 49-512	A-3878‡	T-14S84‡		‡ Bend mounting tabs down, file out holes and mount on original bracket.

SPEAKER

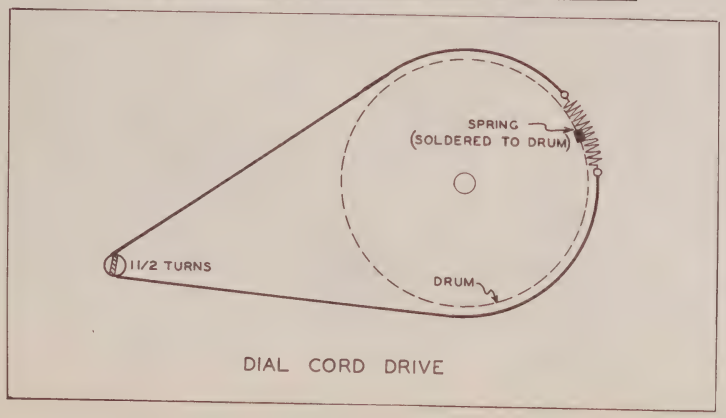
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.		
39	FIELD	VC IMP.				
	PM	3.2Ω	49-512	ST-106		
40	CONE DIA.	VC DIA.				
	5"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
41	Loop Ant.	.8Ω		S10857		
42	RF Coil	12.5Ω	13Ω	S10884		
43	Osc. Coil	3.8Ω	10Ω	S10863	14-1040	
44	Input IF	21Ω	20Ω	95-804	16-6658	
45	Output IF	19Ω	19Ω	95-805	16-6670	

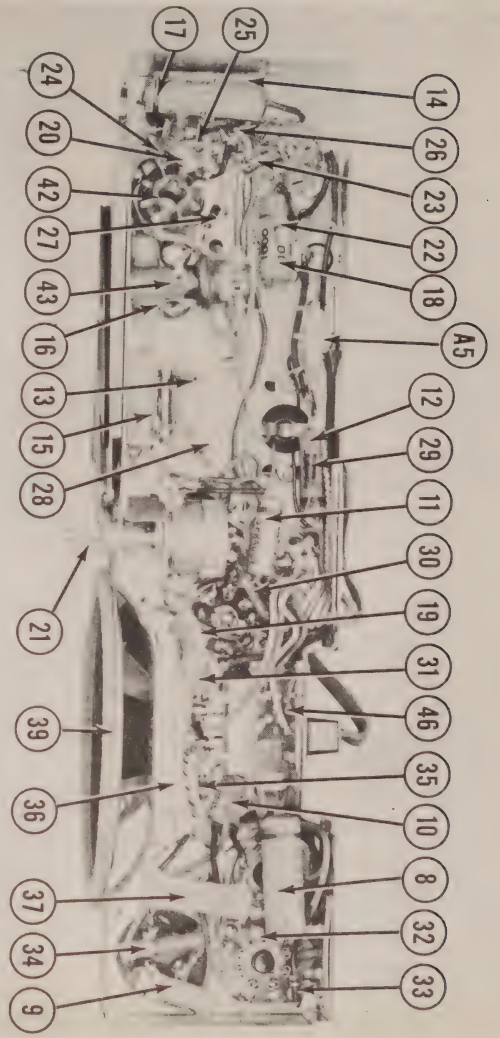
MISCELLANEOUS

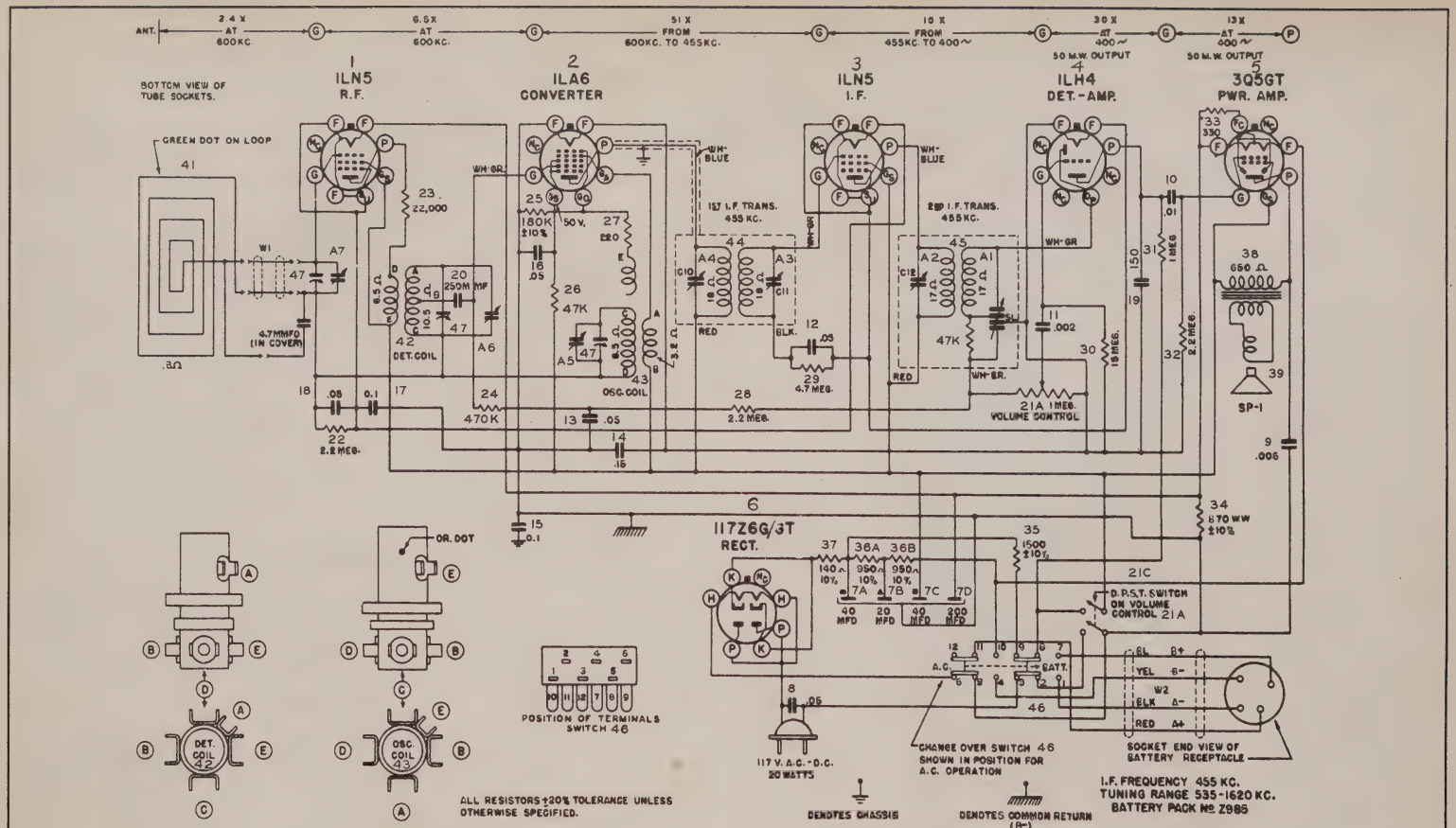
ITEM No.	PART NAME	ZENITH PART No.	NOTES
46	Switch	85-311	Change Over
47	Tuning Cap.	22-1352	3 Gang Variable Cap.
A5	Trimmer	22-1228	Broadcast Osc.
	Cable	S10862	Wavemagnet
	"	S11019	Battery
	Battery Pack	5-27	2985



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

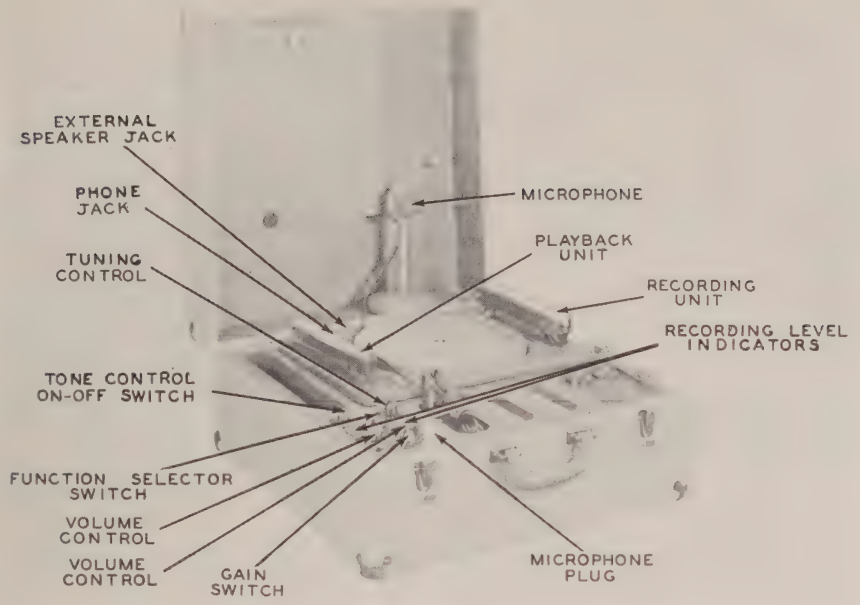
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	5.6V.DC	53V.DC	78V.DC	4.4V.DC	4.4V.DC	0V.	0V.	4.4V.DC
2	1LA6	1.5V.DC	78V.DC	78V.DC	0V.	44.5VDC	0V.	0V.	0V.
3	1LN5	4.4V.DC	78V.DC	78V.DC	2.9V.DC	2.9V.DC	0V.	0V.	2.9V.DC
4	1LH4	2.9V.DC	55V.DC	0V.	0V.	1.5VDC	0V.	0V.	1.5V.DC
5	3Q5GT	0V.	84V.DC	75V.DC	78V.DC	0V.	1.5V.DC	57V.DC	7V.DC
6	117Z6GT	0V	117V AC	117VAC	107VDC	117VAC	0V	0V	107V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	56Ω	50KΩ	35KΩ	48Ω	48Ω	2.2MEG	INF	48Ω
2	1LA6	22Ω	35KΩ	35KΩ	165KΩ	65KΩ	3.3MEG	3MEG	0Ω
3	1LN5	48Ω	35KΩ	35KΩ	37Ω	37Ω	4.7MEG	INF	37Ω
4	1LH4	37Ω	1MEG	INF	90KΩ	36Ω	15MEG	INF	22Ω
5	3Q5GT	INF	75Ω	35KΩ	35KΩ	2MEG	36Ω	57Ω	65Ω
6	117Z6GT	INF	250Ω	250Ω	1900Ω	250Ω	INF	48Ω	1900Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



MEISSNER MODEL 9-1065

TRADE NAME	Meissner Model 9-1065
MANUFACTURER	Meissner Mfgr. Co., Div. of Maguire Industries Inc., Mt. Carmel, Ill.
TYPE SET	Radio-Phono-Recorder-PA System - Superheterodyne Radio - Self Contained Loop Antenna
TUBES (SEVEN)	Types, 6SA7 Converter, 6SF7 IF-2nd Det., 3SJ7 Mic. Amp., 6SJ7 Mic. Amp., 6SC7 AF-Mixer Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-125 Volts AC Rating .540 Amps. @ 117V AC
TUNING RANGE—BROADCAST	530-1610KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #6 (grid) of 6SA7. Low side to chassis.	4[illegible]0KC	Point of no interfering signal.	Across voice coil	[illegible]	Adjust for maximum output.
200 MMFD	High side to ant. lead. Low side to chassis.	1600KC	1500KC	"	[illegible]	" " " "
"	"	1400KC	Tune in 1400KC signal.	"	[illegible]	" " " "

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

MEISSNER
MODEL 9-1065

MEISSNER
MODEL 9-1065

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	RF-2nd Det.	6SF7	6SF7	7AZ	
3	Mic. Amp.	6SJ7	6SJ7	8N	
4	Mic. Amp.	6SJ7	6SJ7	8N	
5	AF-Mixer Amp.	6SC7	6SC7	8S	
6	Power Output	6V6GT	6V6GT	7AC	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

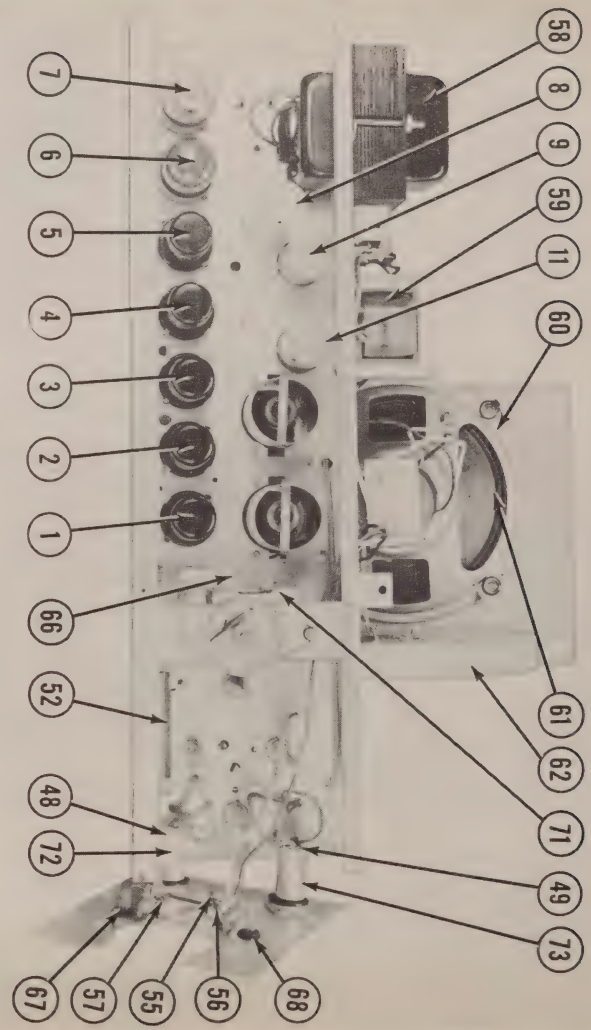
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MEISSNER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	15	450	16124	FP234	DY-2x20-450	EL-220	AF22F	UP6BJ38	■ Filter
B	15	450							▲ "
9A	20	25	24126	FP211†	DY-2x20-25	EL-325†		UP4CJ43†	■ Cath. Bypass
B	20	25							▲ " "
10	10	450	16113	TC72	M-10-450	UT-12	PRS450-10	BR1045	Plate Decoupling
11A	20	25	24126	FP211†	DY-2x20-25	EL-325†		UP4CJ43†	■ Cath. Bypass
B	20	25							" "
12	.01	110	16107	TP421	S-4-01	TC-11	484-.01	DT4S11	Line Bypass
13	.01	1000	16136	TP434	S-10-01	TR-11	1084-.01	MD16S1	6V6 Plate Bypass
14	.01	400	14110	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
15	.1	400	15143	TP428	S-4-1	TC-1	484-.1	DT4P1	6SJ7 Screen Bypass
16	.1	400	15143	TP428	S-4-1	TC-1	484-.1	DT4P1	" " "
17	.01	400	14110	TP421	S-4-01	TC-11	484-.1	DT4S1	Mike Coupling
18	.01	400	14110	TP421	S-4-01	TC-11	484-.1	DT4S1	Audio Coupling
19	.01	400	14110	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
20	.01	400	14110	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
21	.1	400	15143	TP428	S-4-1	TC-1	484-.1	DT4P1	Screen Bypass
22	.1	400	15143	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Coupling
23	.1	200	15142	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
24	.1	400	15143	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Plate Decoup.
25	.05	400	14181	TP426	S-4-05	TC-1	484-.05	DT4S5	Tone Compensation
26	250	500	14102	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
27	100	500	14101	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cap.

† Do not connect one section

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MEISSNER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28A	25KΩ	1	9-1065	UM129	D11-120	AM-40-S	Tone Control
B	Shaft		Not Req.	SS1	A & C3	FS-4	Attach to 28A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
29A	500KΩ	1	19827	UM154	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	SS1	A & C3	RS-4	Attach to 29A per instructions
30A	500KΩ	1	19827	UM154	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	SS1	A & C3	RS-4	Attach to 30A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MEISSNER PART No.	IRC PART No.	
31	20KΩ	½	14169	BTS-22K	Red-Blk.-Or. Osc. Grid
32	15 Meg.	½	16166	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
33	20KΩ	1	14190	BTA-22K	Red-Blk.-Or. IF Screen Dropping
34	200KΩ	½	14170	BTS-220K	Red-Blk.-Yl. Diode Load
35	3 Meg.	½	17146	BTS-3.3 Meg.	Or.-Blk.-Grn. AVC Network
36	500KΩ	½	14155	BTS-470K	Grn.-Blk.-Yl. 1st Mike Amp. Plate Load
37	2 Meg.	½	24127	BTS-2.2 Meg.	Red-Blk.-Grn. " " " Screen Dropping
38	1000Ω	½	14191	BTS-1000	Br.-Blk.-Red " " " Cathode
39	100KΩ	½	14144	BTS-100K	Br.-Blk.-Yl. Mike Amp. Filter
40	2 Meg.	½	24127	BTS-2.2 Meg.	Red-Blk.-Grn. 2nd Mike Amp. Screen Dropping
41	100KΩ	½	14144	BTS-100K	Br.-Blk.-Yl. " " " Plate Load
42	1000Ω	½	14191	BTS-1000	Br.-Blk.-Red " " " Cathode
43	1500Ω	½	14194	BTS-1500	Br.-Grn.-Red AF Cathode
44	100KΩ	½	14144	BTS-100K	Br.-Blk.-Yl. AF Plate Load
45	50KΩ	½	14151	BTS-47K	Grn.-Blk.-Or. AF Plate Filter
46	500KΩ	½	14155	BTS-470K	Grn.-Blk.-Yl. Output Grid
47	250Ω	1	24135	BW-1-270	Red-Grn.-Br. Output Cathode
48	1 Meg.	½	18152	BTS-1 Meg.	Br.-Blk.-Grn. 1st Mike Grid Load-See Note 1
49	1 Meg.	½	18152	BTS-1 Meg.	Br.-Blk.-Grn. 2nd " " " " " "
50	2 Meg.	½	24127	BTS-2.2 Meg.	Red-Blk.-Grn. Gain Reduction
51	2 Meg.	½	24127	BTS-2.2 Meg.	Red-Blk.-Grn. " "
52	4.5Ω	10	16198	AB-5	Output Transformer Shunt
53	100Ω	½	16152	BW-½-100	Br.-Blk.-Br. Speaker Limiting
54	25KΩ	1	15193	BTA-27K	Red-Grn.-Or. Cutting Head Series
55	500KΩ	½	14155	BTS-470K	Grn.-Blk.-Yl. Overload Indicator
56	1 Meg.	½	18152	BTS-1 Meg.	Br.-Blk.-Grn. " "
57	200KΩ	½	14170	BTS-220K	Red-Blk.-Yl. Normal Indicator

Note 1-Enclosed within plug can.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	MEISSNER PART No.	STANCOR PART No.	THORDARSON PART No.	
58	117VAC @ .54A		65VAC @ 2.5A	4.2VAC @ 2.1A	19847	P-8120*	T-15R20*	*Drill new mounting holes

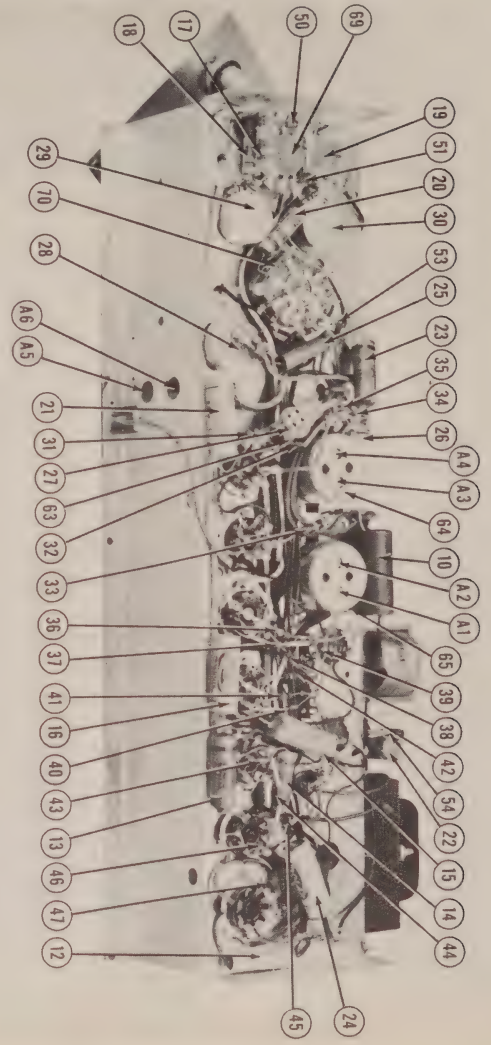
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MEISSNER PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
59	20000Ω Tapped @ 6435Ω	3.15Ω	1440Ω Tapped @ 590Ω	.15Ω	19851				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MEISSNER PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.	19395	ST-451		
60	600Ω	3.15Ω	19388	ST-451		
	CONE DIA.	VC DIA.				
61	5-5/16"	3/4"	NOT REALLY REPLACEABLE-ONE COMPLETE SPEAKER UNIT.			

CHASSIS—BOTTOM VIEW



CUTTING ARM ADJUSTMENTS

CUTTING ARM HEIGHT

1 - Place on the turntable an uncut record of the type that is to be used for recording.

2 - Place stylus in the cutting head. Insert it as far as it will go, rotate it until the long flat on the shank of the stylus faces the stylus screw, then firmly tighten the screw.

3 - Raise the cutter arm well up from its rest, swing it over the record and carefully lower it so that the stylus rests on the record near the center (which should not be revolving). Observe the position of the stylus screw in the slot in the cutter arm. If the screw is approximately in the middle of the slot no adjustment of the cutter arm height is required, but if the stylus screw is close to either the top or the bottom of the slot the arm should be adjusted in the following manner:

(a) Lift the cutter arm into a vertical position. Underneath the arm will be found a machine screw on which the arm rests. The adjustment of this screw is preserved by a lock nut. Loosen the lock nut and rotate this screw until the stylus screw occupies the center position in the slot when the cutter arm is in the recording position, then tighten the lock nut and again check the position of the stylus screw to see that the adjustment has not been disturbed by tightening the lock nut.

(b) Cut a few blank grooves (volume control at zero) while watching the stylus screw to see that as the record revolves, the stylus screw does not approach either end of the slot. If this condition holds true, the height of the cutter arm is properly adjusted until a new stylus is used having a length a great deal different than the stylus used in the original adjustment, or unless records of a new thickness are used that are sufficiently different from the original records to require readjustment of cutter arm height. NEVER ATTEMPT TO MAKE A RECORDING WITH MORE THAN ONE DISC ON THE TURNTABLE.

If the normal position of the screw is too high, the entire weight of the cutting arm is placed on the stylus when the stylus screw hits the top of the slot. This heavy weight will cause the stylus to dig into the record base and ruin at least the record and in all probability the stylus as well.

CUTTING PRESSURE

Variation in the hardness of different record coatings may require different cutting pressures for different makes of records.

The normal depth of cut produces a width of groove approximately equal to the width of groove approximately

The normal depth of cut produces a width of groove approximately equip to the width of the uncut portion left standing between grooves. Examine the blank grooves cut during the preliminary adjustment to see whether they approach this condition. If not, the adjusting screw exposed through the top of the cutting arm can be changed quite easily to accomplish the desired result. If the cut is too light, the playback needle may not "track" and may jump out of the groove and scratch across the record. If the cut is too heavy the stylus may cut over into the adjacent groove on loud notes, or in cutting one groove, the stylus may push some of the wall material into the previously cut groove producing what is called an "echo," although when played back the "echo" precedes rather than follows the normally recorded sound.

The most common error in adjusting cutting pressure is making the cutting pressure greater than necessary, which increases the wear on the stylus, increases echo, and increases the difference in speed between recording and playback.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
62	Loop Ant.	.3Ω	3Ω	02076		
63	Osc. Coil		6Ω	01710	14-1040	
64	Input IF	20Ω	19Ω	02072	18-6658	Use old shield
65	Output IF	20Ω	19Ω	02074	18-6660	" " "

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MEISSNER PART No.		INSTALLATION NOTES
66	Bayonet	6-8	0.2	white	19262		Type 81

MISCELLANEOUS

ITEM No.	PART NAME	MEISSNER PART No.	NOTES
67	Neon Indicator	19628	
68	" "	19328	
69	Gain Switch	19843	
70	Master Switch	19842	
71	Tuning Cap.	18162	2 Gang Variable Cap.
72	1st Mic. Socket	19813	
73	2nd " "	19813	
	Dial Scale	19846	
	Motor Turntable	19821	
	Jack	19470	External Speaker
	Pin Jack	19468	Monitor Phones
	Microphone	19655	
	Mic. Plug	19656	

DISASSEMBLY INSTRUCTIONS

1 - Remove 10 mounting screws that hold panel-board to cabinet.

2 - Remove the two volume control knobs, gain switch knob, selector switch knob, tone and tuning knobs.

3 - Remove two screws holding speaker baffle board; allowing the speaker and loop antenna to come free.

4 - Unsolder red, green, and black leads from terminal strip. Make sketch showing connections.

5 - Unsolder two phono pickup leads - brown to ground, black to phono-switch terminal (blank lug).

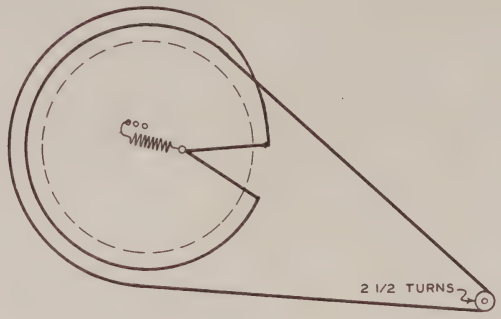
6 - Unsolder red and black leads of recorder head from terminal strip - black to ground and red to adjacent terminal.

7 - Unsolder black ground lead from phono-motor frame.

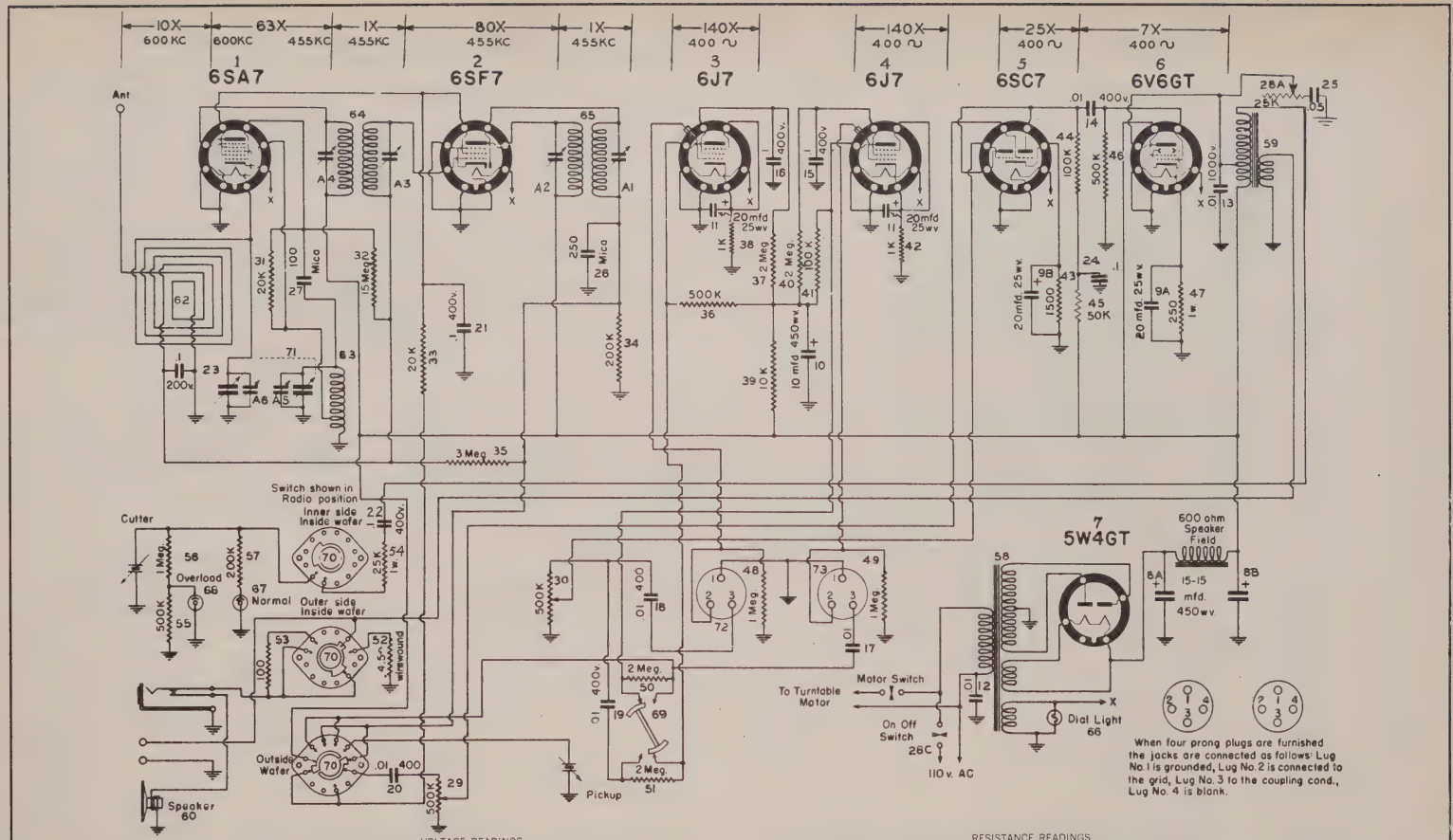
8 - Remove chassis from cabinet board; allowing chassis to come free (nut and lock washer).

9 - Remove phono-jack (1 lock nut).

10- Unsolder red and blue leads from tip jacks.



DIAL CORD DRIVE



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0 V.	0 V	245VDC	73V DC	-1.45VDC	0 V.	6.5VAC	42VDC
2	6SF7	0 V.	0 V.	0 V.	73VDC	-.24VDC	245VDC	6.5VAC	0V
3	6SJ7	0 V.	0 V.	43VDC	-1VDC	43VDC	15.5VDC	6.5VAC	75VDC
4	6SJ7	0 V.	0 V	44VDC	-1V DC	44VDC	17.3VDC	6.5VAC	10VDC
5	6SC7	0 V	117VDC	0 V	0 V.	117VDC	1.5VDC	6.5VAC	0V
6	6V6GT	0 V.	0 V	222VDC	250VDC	0 V.	200VDC	6.5VAC	12VDC
7	5Y3GT	0 V.	290VDC	0 V	290VAC	0 V	290VAC	0 V	290VDC

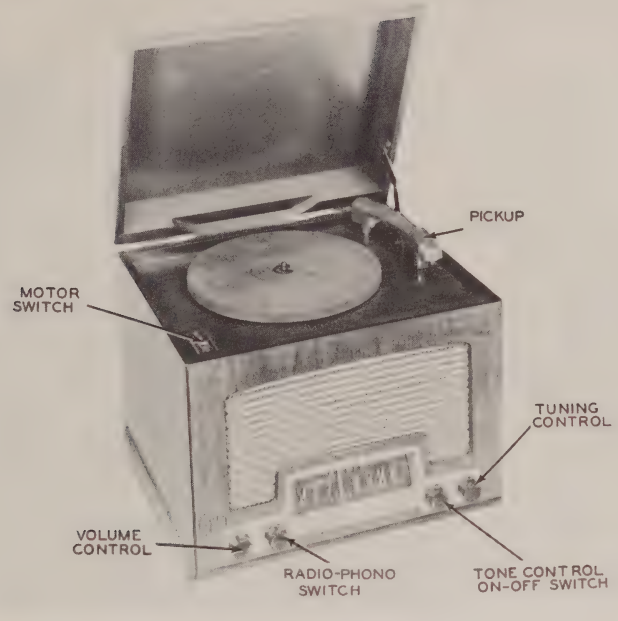
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0 Ω	0 Ω	310KΩ	330KΩ	17KΩ	5 Ω	0 Ω	2.5MEG
2	6SF7	0 Ω	2.5MEG	0 Ω	330KΩ	180KΩ	310 Ω	0 Ω	0 Ω
3	6SJ7	0 Ω	0 Ω	1K Ω	850KΩ	1K Ω	2.3MEG	0 Ω	850KΩ
4	6SJ7	0 Ω	0 Ω	1.1KΩ	900KΩ	1.1KΩ	2.3MEG	0 Ω	850KΩ
5	6SC7	0 Ω	460KΩ	460KΩ	510KΩ	460KΩ	1.4KΩ	0 Ω	0 Ω
6	6V6GT	0 Ω	0 Ω	310KΩ	310KΩ	560KΩ	370KΩ	0 Ω	225Ω
7	5Y3GT	INF	310KΩ	INF	200 Ω	INF	210 Ω	INF	310KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ARVIN
MODEL 558



ARVIN MODEL 558

TRADE NAME	Arvin Model 558 (Chassis RE-204)
MANUFACTURER	Noblitt-Sparks Industries Inc. - 13th St. & Big Four RR - Columbus, Indiana
TYPE SET	Combination AC Record Player - AC-DC Superheterodyne Radio Self Contained Loop Ant.
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC RATING - .270 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to antenna stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with low side to B- and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
50 MMFD	High side to ant. connection on back of loop. Low side to B-.	1400KC	1400KC	"	A5,A6.	Adjust for maximum output. Use isolation transformer or capacitor.
"	"	600KC	600KC	"		Adjust antenna section plates of variable cond. for maximum output.
						Repeat all adjustments as given.

Check that dial pointer is at last rectangular mark at left edge of dial with gang fully closed. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Loop in same relative position to chassis as when in cabinet. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS (Continued)

TUBES

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	6AD	
2	IF Amp.	12SK7GT	12SK7GT	6N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	6Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	10	150	A19780	TN129	DSB-40+30+20-	UT-121	PRS150-12	EZ42215	Filter - Yellow
B	40	150			150	TA-240	PRS150-40-40		" - Red
C	20	150							" - Blue
7	.05	400	C20068-503	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.05	200	C20067-503	TP426	S-4-05	TC-15	484-.05	DT4S5	Phono Coupling
9	.02	400	C20068-203	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
10A	.002	600	C20069	TP405	S-6-002	TC-22	684-.002	DT6D2	Tone Compensation
B	.05	400	C20068-503	TP426	S-4-05	TC-15	484-.05	DT4S5	" " *
11	.002	600	C20069	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
12	.002	600	C20069	TP405	S-6-002	TC-22	684-.002	DT6D2	" "
13	.05	200	C20067-503	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.2	400	A19765	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
15	500	500	C20065-501	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
16	500	500	C20065-501	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	RF Bypass Vol. Cont.
17	50	500	C20065-500	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Capacitor

*Not used in all models

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18	1 Meg.	1	C19753	MK402	D13-137	A1-68-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 18A per instructions
19A1	50KΩ	1	C19752	UM133	D13-123	AM-48-Z	Tone Control - See Note 1
B1	Shaft		Not Req.	SS25	E	KSS-3	Attach to 19A-1 per instructions
C1	Switch		" "	M26	41	SW-A	" " " "
19A2	500KΩ	1	C19947	MK401	D13-133	AM-60-Z	Tone Control-See Note 2
B2	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A2 per instructions
C2	Switch		" "	M26	41	SW-A	" " " " "

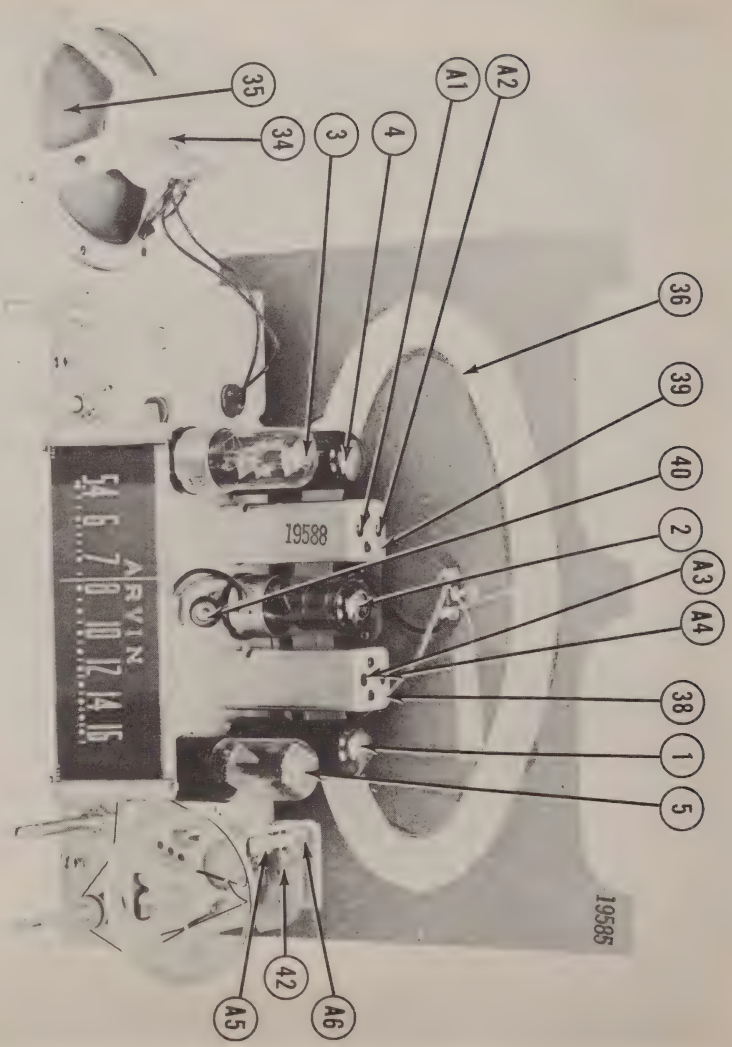
Note 1- Used in sets having tone control in output plate circuit as dotted in schematic.
Note 2- Used in sets having tone control on control grid of output tube.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
20	15 Meg.	½	C20060-156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
21	22KΩ	½	C20060-223	BTS-22K	Red-Red-Or. Osc. Grid
22	330KΩ	½	C20060-334	BTS-330K	Or.-Or.-Yl. Line Isolating
23	1 Meg.	½	C20060-105	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
24	2.2 Meg.	½	C20060-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
25	15 Meg.	½	C20060-156	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
26	470KΩ	½	C20060-474	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
27	470KΩ	½	C20060-474	BTS-470K	Yl.-Vi.-Yl. Output Grid-See Note 1
28	150Ω	½	C20060-151	BW-½-150	Br.-Grn.-Br. Output Cathode
29	12KΩ	1	C20070-123	BTA-12K	Br.-Red-Or. Bleeder
30	15Ω	½	C20060-150	BW-½-15	Br.-Grn.-Blk. Filter
31	68Ω	½	C20060-681	BTS-680	Blue-Gray-Or. Pilot Light Shunt

Note 1 - Dotted portion of schematic used only when tone control is in the output plate circuit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000~	REPLACEMENT DATA: ARVIN PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
32	29Ma.	365Ω	7.25H	AC-1956-1	C-1723	T-14C64‡	‡Drill new mounting holes

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
33	2200Ω	3.05Ω	110Ω	.4Ω	AC-19591-1	A-3673	T-13342‡		‡Drill new mounting holes

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
	FIELD	VC IMP.				
34	PM	3.05Ω	C19620	ST-106		
	CONE DIA.	VC DIA.				
35	4-13/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: MEISSNER PART No.	INSTALLATION NOTES
36	Loop Ant.	.2Ω	1Ω	AC19585-1		
37	Osc. Coil	.6Ω	6Ω	AC19586-1	14-1040	
38	Input IF	17.8Ω	17.5Ω	AC19587-1	16-6666	
39	Output IF	17Ω	16.4Ω	AC19588-1	16-6667	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
40	Bayonet	6-8	0.15	Brown			Type 47

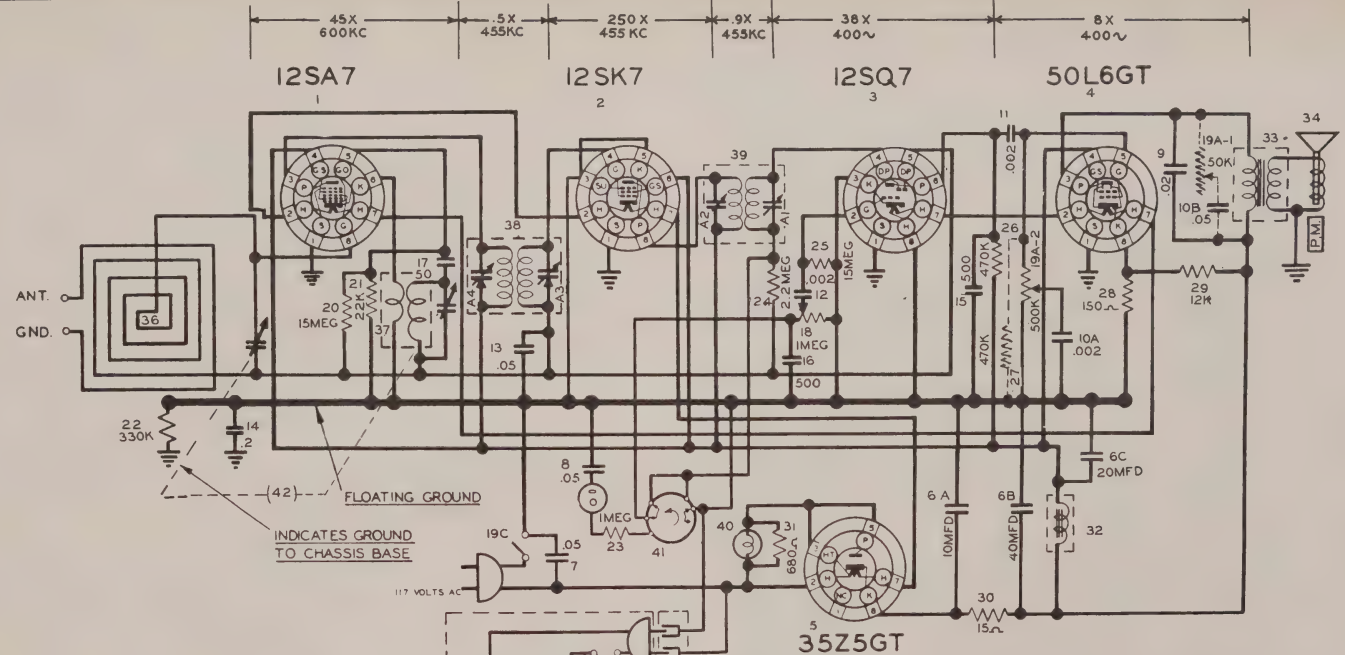
MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
41	Switch	C19754	Radio-Phono
42	Tuning Cap.	C19584	2 Gang Tuning Cap.
	Switch	A19545	On-Off Phono Motor
	Motor Assby.	E19475	Phono Motor & Turntable
	Pick-up Arm	C19594	
	Dial Pointer	A19578	
	" Glass	C19615	
	Knob	C19597	Volume
	"	C19598	Tuning
	"	C19599	Phono-Switch
	"	C19600	Tone Control

DISASSEMBLY INSTRUCTIONS

1 - Remove radio-phono, volume, tone and tuning control push-on knobs from front panel; also, remove four felt washers.
2 - Remove 8 screws holding antenna loop to cabinet.
3 - Remove antenna loop plug from chassis and remove loop.
4 - Remove phono-motor plug from socket on chassis.
5 - Remove speaker plug from socket.
6 - Remove phono pick-up plug from phono-jack.
7 - Remove four Phillips head screws and washers holding chassis to mounting board.
8 - Remove chassis from cabinet.
9 - Lift off chassis bottom plate.

CHASSIS—BOTTOM VIEW

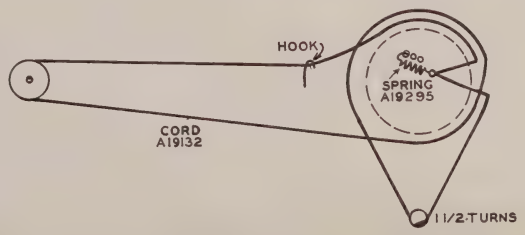


VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	85V.AC	103V.DC	103V.DC	-7V.DC	0V.	72V.AC	-.4V.DC
2	12SK7GT	0V.	72V.AC	0V.	-.4V.DC	0V.	103V.DC	62V.AC	103V.DC
3	12SQ7GT	0V.	-.65V.DC	0V.	-.47V.DC	-.4V.	60V.DC	11.5V.AC	0V.
4	50L6GT	0V.	62V.AC	112V.DC	103V.DC	0V.	0V.	11.5V.AC	7.2V.DC
5	35Z5GT	0V.	117V.AC	112V.AC	0V.	112V.AC	117V.AC	85V.AC	117V.DC

RESISTANCE READINGS

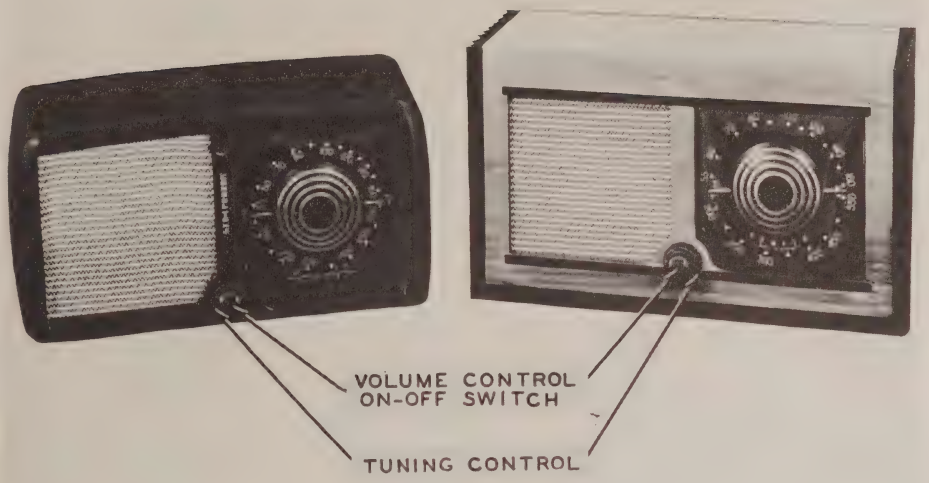
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	380KΩ	82Ω	10KΩ	10KΩ	23.5KΩ	.5Ω	72Ω	2.3MEG
2	12SK7GT	380KΩ	72Ω	0Ω	2.3MEG	0Ω	10KΩ	58Ω	10KΩ
3	12SQ7GT	380KΩ	10MEG	0Ω	900KΩ	2.3MEG	480KΩ	12.5Ω	0Ω
4	50L6GT	380KΩ	58Ω	10KΩ	10KΩ	450KΩ	0Ω	12.5Ω	130Ω
5	35Z5GT	380KΩ	108Ω	105Ω	INF	105Ω	108Ω	82Ω	10KΩ



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ZENITH
MODELS 5D011, 5D027
(CHASSIS NO. 5C01, 5C02)



ZENITH
MODELS 5D011, 5D027
(CHASSIS NO. 5C01. 5C02)

ZENITH MODEL 5D011

TRADE NAME	Zenith Models 5D011, 5D027 Chassis No. 5C01, 5C012
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES(FIVE)	Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-Amp., 50L6GT Power Amp., 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC Rating .240 Amps. @ 117 V AC
TUNING RANGE—BROADCAST	535-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD.	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with ground lead and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1600KC	1600KC	"	A5	Adjust for maximum output. Connect output of signal generator to loop of one turn and radiate signal into wave-magnet.
	"	1400KC	1400KC	"	A6	"

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	6N	
3	Det.-Amp.	12SQ7GT	12SQ7GT	8Q	
4	Power Amp.	50L6GT	50L6GT	7WC	
5	Rectifier	35Z5GT	35Z5GT	5AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	20	150	22-1519	FP357	DY-2x20-150	EL-224	AF844D	UP6CJ44	Filter
B	20	150							▲ "
C	40	150			M-40-150				■ "
7	.05	200	22-1017	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating
9	.03	400	22-1049	TP424	S-4-03	TC-13	484-.03	DT4S3	50L6 Plate Bypass
10	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
11	.0005	600	22-854	TP403	S-6-0005	TC-35	1468-.0005	DT6T5	Audio Plate Bypass
12	.002	600	22-492	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
13	.04	200	22-1202	TP425	S-4-04	TC-14	484-.04	DT4S4	Tone Compensation
14	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
15	250	500	22-182	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	50L6 Plate Bypass
16	200	500	22-953	MC237	M0.5-32	1FM-32	1468-.0002	5W5T2	RF Bypass Diode

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	1	63-1037				Volume Control & Sw.
B	Shaft		Not Req.				
C	Switch		"				

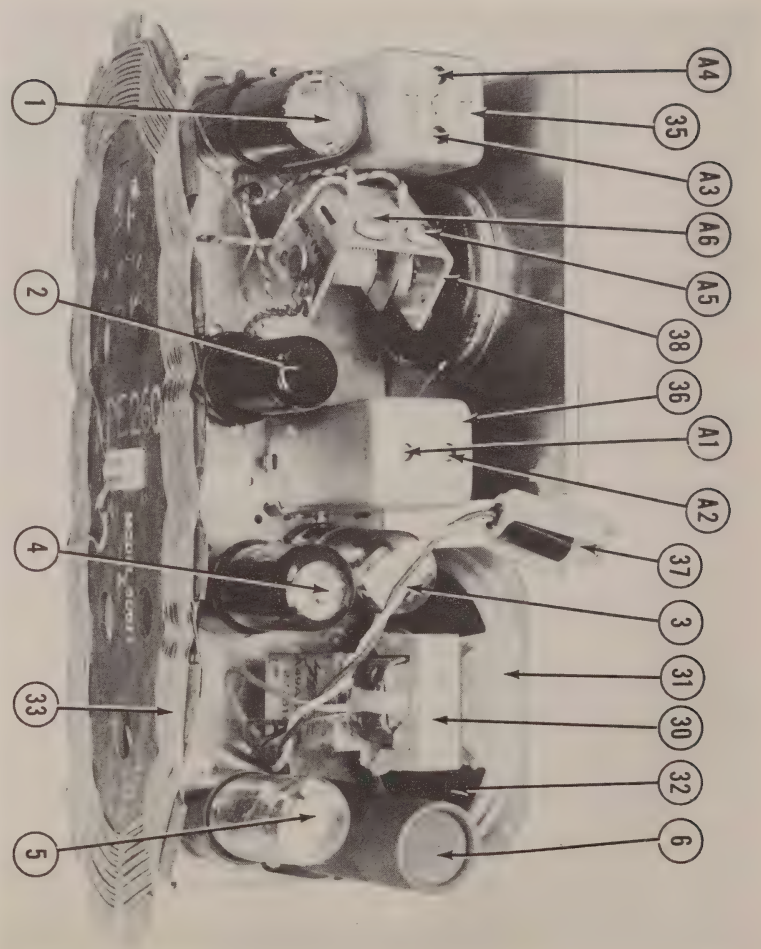
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
18	220Ω	½	63-579	BW-½-220	Red-Red-Br. Parasitic Suppressor
19	10KΩ	½	63-589	BTS-10K	Br.-Blk.-Or. Osc. Grid
20	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
21	2.2 Meg.	½	63-300	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	10KΩ	½	63-641	BTS-10K	Br.-Blk.-Or. Tone Compensation
23	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
24	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid Load
25	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Output Grid
26	150Ω	½	63-686	BW-½-150	Br.-Grn.-Br. Output Cathode
27	470Ω	1	63-1449	BTA-470	Yl.-Vi.-Br. Filter
28	470Ω	1	63-1222	BTA-470	Yl.-Vi.-Br. Filter
29	22Ω	1	63-1450	BW-1-22	Red-Red-Blk. Surge Limiter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
30	1700Ω	3.2Ω	150Ω	.47Ω	Part of 48-547				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
	FIELD	VC IMP.				
31	PM	3.2Ω	49-547	ST-113		
	CONE DIA.	VC DIA.				
32	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

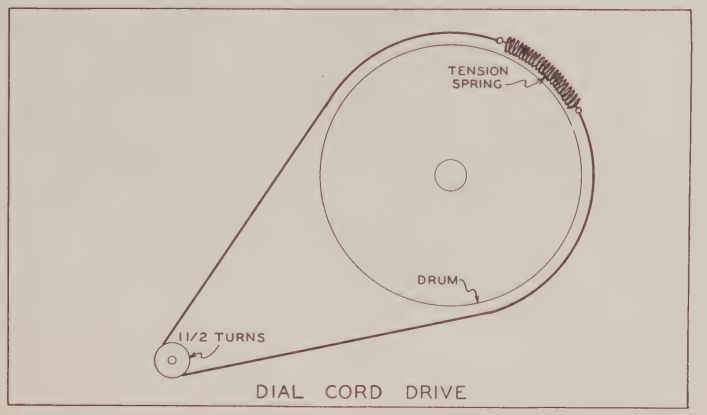
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
33A	Loop Ant.	0Ω	1Ω	S11099		Used on Chassis 5C01
33B	Loop Ant.			A12466		" " " 5C01Z
34A	Osc. Coil	.7Ω	9Ω	S11136	14-1040	" " " 5C01
34B	Osc. Coil	.8Ω	9.5Ω	S12491	14-1040	" " " 5C01Z
35	Input IF	24Ω	16Ω	95-929	16-6658	
36	Output IF	17Ω	18.5Ω	95-930	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA	INSTALLATION NOTES
37	Bayonet	6-8	0.15	Brown	1[illegible]-67		Type 47

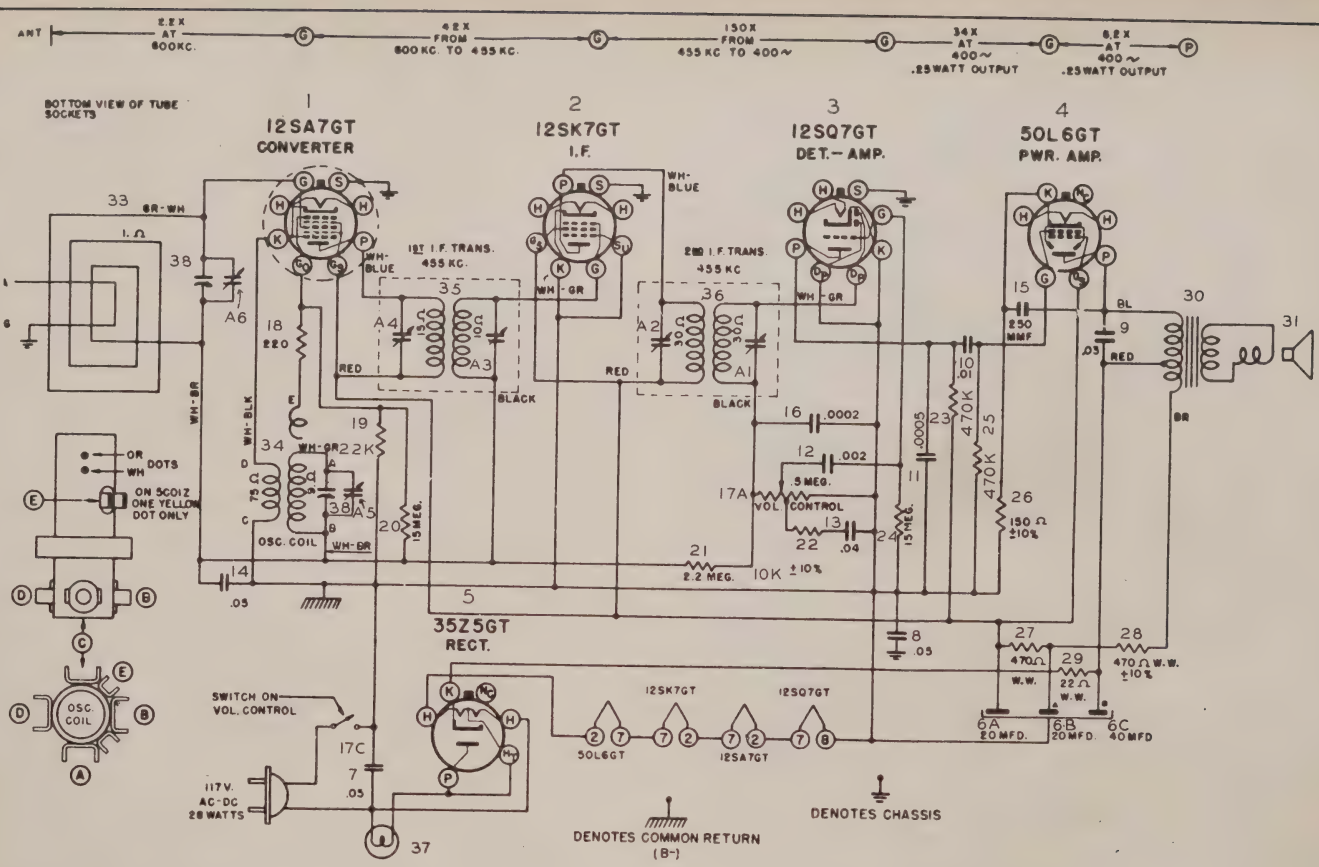
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
38A	Tuning Cap.	22-1356	2 Gang Variable Cap. Ch. No. 5C01
38B	" "	22-1518	" " " " Ch. No. 5C01Z
	Dial Scale	26-331	Used on Ch. No. 5C01
	" "	26-364	Used on Ch. No. 5C01Z



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	12.5V.AC	85V.DC	85V.DC	-.4V. DC	0V.	25V.AC	-.55V.DC
2	12SK7GT	0V.	25V.AC	0V.	-.52VDC	0V.	85V.DC	36.5VAC	85V. DC
3	12SQ7GT	0V.	-.43V.DC	0V.	-.17V.DC	0V.	107V.DC	12.5V.AC	0V.
4	50L6GT	0V.	86V.AC	108V.DC	85V.DC	0V.	0V.	36.5V.AC	5 V. DC
5	35Z5GT	0V.	117V.AC	113V.AC	0V.	113V.AC	0V.	86V.AC	112V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	13Ω	70KΩ	70Ω	10KΩ	.5Ω	26Ω	2.5MEG
2	12SK7GT	INF	26Ω	0Ω	2.5MEG	0Ω	70KΩ	39Ω	70KΩ
3	12SQ7GT	INF	10MEG	0Ω	450KΩ	0Ω	540KΩ	13Ω	0Ω
4	50L6GT	INF	82Ω	70KΩ	71KΩ	490KΩ	INF	39Ω	140Ω
5	35Z5GT	INF	110Ω	108Ω	INF	108Ω	INF	82Ω	70KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

LEARADIO
MODELS 6614, 6615, 6616, 6619

LEARADIO
MODELS 6614, 6615, 6616, 6619

LEARADIO MODEL 6616

TRADE NAME	Learadio Models 6614, 6615, 6616, 6619
MANUFACTURER	Lear Inc., 110 Ionia Ave., N.W., Grand Rapids 2, Michigan
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AF-AVC, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC Rating .255 Amps. @ 117 V AC
TUNING RANGE—BROADCAST	540-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	1620KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200 MMFD	High side to ant. lead (blue). Low side to B-.	"	"	"	A5	Adjust for minimum output. Use isolation transformer or isolating capacitor.
"	"	1620KC	"	"	A6	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	1500KC	1500KC	"	A7	"
"	"	600KC	600KC	"	A8	Adjust for maximum output. Use isolation transformer or isolating capacitor. Repeat adjustments as given for A6 and A7.

Set dial pointer at 1620KC with tuning unit drive turned fully clockwise against stop. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: LEARADIO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: LEARADIO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150	52326	2N520	M-50+30-150	TA-530	PRS150-40-40	BRL3515	Filter - Red
B	30	150							" - Green
8	.05	600	56656	TP415	S-6-05	TC-15	684-.05	DT6S5	Line Filter
9	.1	400	56631	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
10	.05	400	56628	TP426	S-4-05	TC-15	484-.05	DT4S5	35L6 Plate Bypass
11	.004	200	56589	TP407	S-6-004	TC-24	484-.004	DT6D4	Audio Coupling
12	.002	600	56642	TP405	S-6-002	TC-22	684-.002	DT6D2	Tone Compensation
13	.02	200	56596	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
14	.05	200	56600	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
15	.05	200	56600	TP426	S-4-05	TC-15	484-.05	DT4S5	12SA7 Screen Bypass
16	.05	200	56600	TP423	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
17	.05	200	56600	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Screen Bypass
18	220	500	56659	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
19	100	500	56657	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cap.
20	1000	500	56675	MC255	M0.3-21	1FM-21	1468-.001	1W5D1	Ant. Coupling
21	100	500	56657	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Coupling

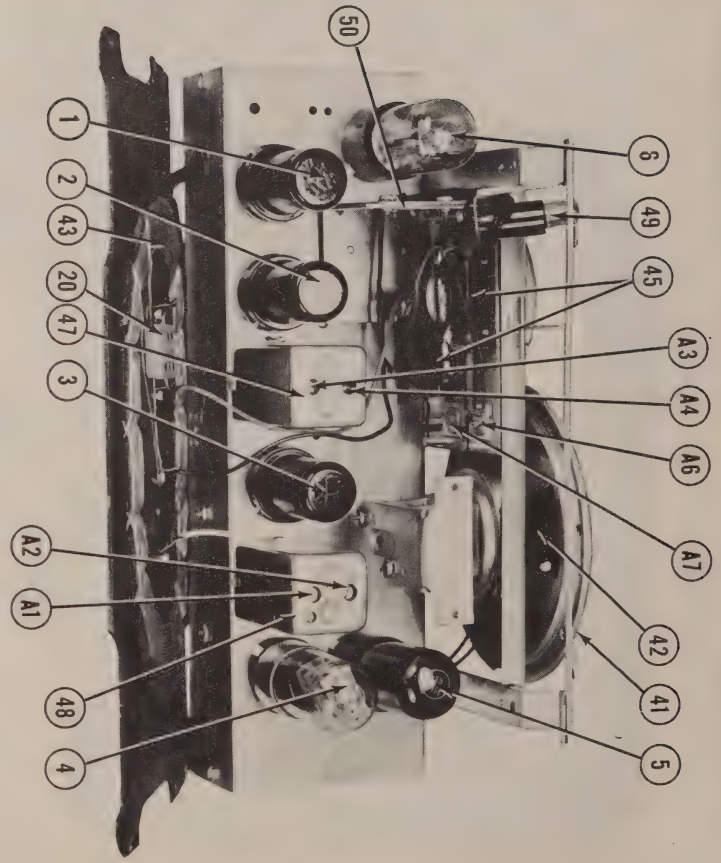
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: LEARADIO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	1	56340	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
23A	500KΩ	1	56339	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: LEARADIO PART No.	IRC PART No.	IDENTIFICATION CODES
24	2700Ω	½	55412	BTS-2700	Red-Vi.-Red RF Plate Load
25	470Ω	½	55469	BTS-470	Yl.-Vi.-Br. RF Decoupling
26	220K	½	55485	BTS-220K	Red-Red-Yl. Converter Grid Load
27	15 Meg.	½	55496	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
28	2.2 Meg.	½	55491	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	22KΩ	½	55479	BTS-22K	Red-Red-Or. Osc. Grid
30	470Ω	½	55469	BTS-470	Yl.-Vi.-Br. Converter Decoupling
31	2.2 Meg.	½	55491	BTS-2.2 Meg	Red-Red-Grn. AVC Network
32	6.8 Meg.	½	55494	BTS-6.8 Meg	Blue-Gray-Grn. 1st AF Grid Load
33	220KΩ	½	55485	BTS-220K	Red-Red-Yl. Line Isolating
34	470KΩ	½	55487	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
35	470KΩ	½	55487	BTS-470K	Yl.-Vi.-Yl. Output Grid Load
36	150Ω	½	55466	BW-½-150	Br.-Grn.-Br. Output Cathode
37	1200Ω	2	55940	BT-2-1200	Br.-Red-Red Filter
38	15Ω	½	55460	BW-½-15	Br.-Grn.-Blk. Rectifier Ballast
39	150Ω	½	55466	BW-½-150	Br.-Grn.-Br. Dial Light Shunt

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		LEARADIO PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
40	2000Ω	3.3Ω	1ΩΩ	.5Ω	52831	A-3876	T-14332		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			LEARADIO PART No.	JENSEN PART No.		
41	FIELD PM	VC IMP. 3.3Ω	53450	ST-116*		*Fabricate mounting bracket or drill and tap magnet frame.
42	CONE DIA. 4-13/16"	VC DIA. 1/2"				

R F COILS

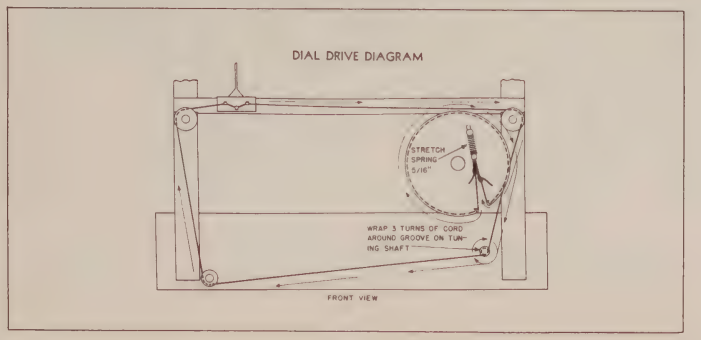
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	LEARADIO PART No.	MEISSNER PART No.	
43	Loop Ant.		1.5Ω	54283		
44	Osc. Coil	1Ω	4.5Ω	54282		Slug adjustment
45A	Ant. Tuner		4.5Ω	Part of 54284		Ganged with Osc. Tuner
45B	Osc. Tuner		11Ω	" " "		" " Ant. "
46	Wave Trap		40Ω	55013		
47	Input IF	21Ω	20Ω	53350	16-6658	
48	Output IF	14Ω		53331	16-6670	

DIAL LIGHT

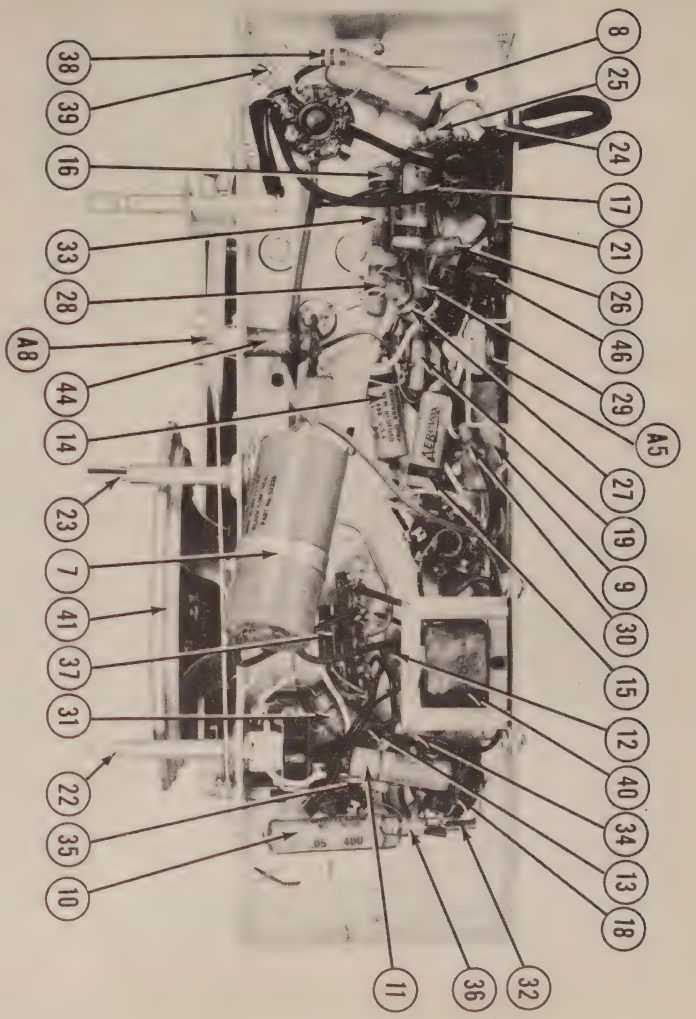
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					LEARADIO PART No.		
49	Bayonet	6-8	0.1A	Brown			Type 47

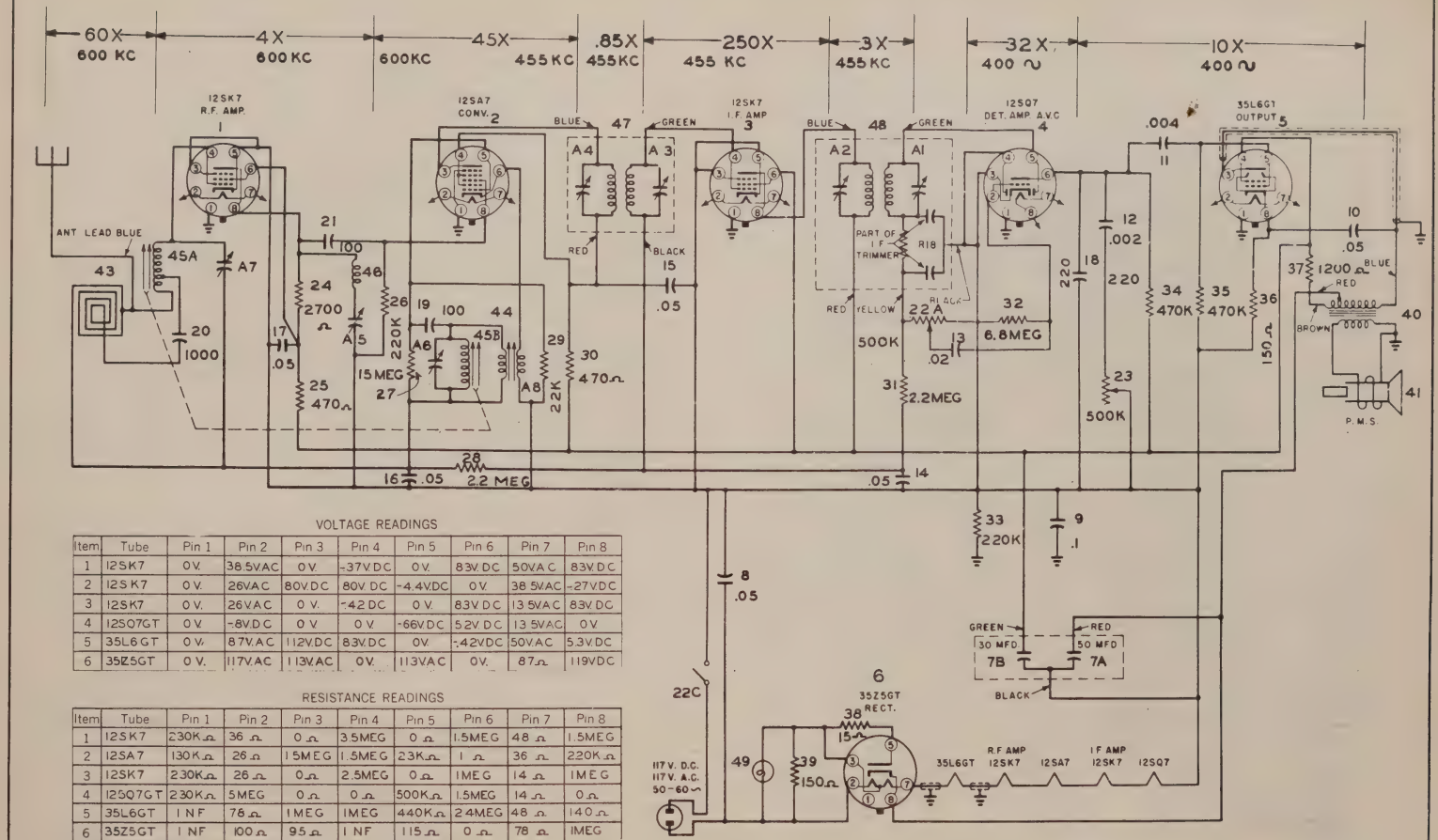
MISCELLANEOUS

ITEM No.	PART NAME	LEARADIO PART No.	NOTES
50	Tuner	54284	Slug Tuner & Pulley Assy.
A5	Trimmer	52853	Wave Trap



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0 V.	38.5 V.AC	0 V.	-37 V.DC	0 V.	83 V. DC	50 V.A.C	83 V.DC
2	12SK7	0 V.	26 V.AC	80 V.DC	80 V. DC	-4.4 V.DC	0 V.	38.5 V.AC	-27 V.DC
3	12SK7	0 V.	26 V.AC	0 V.	-42 DC	0 V.	83 V DC	13.5 V.AC	83 V. DC
4	12SQ7GT	0 V.	-8 V.D.C	0 V.	0 V.	-66 V.DC	5.2 V. DC	13.5 V.AC.	0 V.
5	35L6GT	0 V.	87 V.AC	112 V.DC	83 V.DC	0 V.	-42 V.DC	50 V.AC	5.3 V.DC
6	35Z5GT	0 V.	117 V.AC	113 V.AC	0 V.	113 V.AC	0 V.	87 Ω	119 V.DC

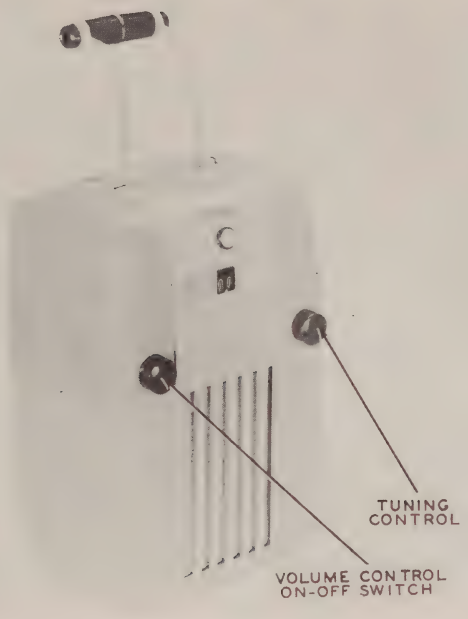
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	230K Ω	36 Ω	0 Ω	3.5 MEG	0 Ω	1.5 MEG	48 Ω	1.5 MEG
2	12SA7	130K Ω	26 Ω	1.5 MEG	1.5 MEG	23K Ω	1 Ω	36 Ω	220K Ω
3	12SK7	230K Ω	26 Ω	0 Ω	2.5 MEG	0 Ω	1 MEG	14 Ω	1 MEG
4	12SQ7GT	230K Ω	5 MEG	0 Ω	0 Ω	500K Ω	1.5 MEG	14 Ω	0 Ω
5	35L6GT	1 NF	78 Ω	1 MEG	1 MEG	440K Ω	2.4 MEG	48 Ω	140 Ω
6	35Z5GT	1 NF	100 Ω	95 Ω	1 NF	115 Ω	0 Ω	78 Ω	1 MEG

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WESTINGHOUSE
MODELS H-125, H-126, H-1251



WESTINGHOUSE MODEL H-1251

TRADE NAME	Westinghouse Models H-125, H-126, H-1251
MANUFACTURER	Westinghouse Electric Corp., Home Radio Div., Sunbury, Pa.
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7 Converter, 12SF7 IF Amp.-Det.-AVC, 12SJ7 AF Amp., 35A5 or 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-120 Volts AC-DC Rating .230 Amps. @ 117V AC
TUNING RANGE—BROADCAST	550-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01MFD	High side to pin #2 (grid) 12SF7. Low side to B-.	455KC	Quiet point at 1600KC end of dial.	Across voice coil	A1,A2.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with low side to B- and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	High side to pin #8 (grid) 12SA7. Low side to B-.	"	"	"	A3,A4.	"
"	"	"	"	"	A1, A2, A3, A4.	"
"	High side to ant. terminal. Low side to B-.	"	600KC	"	A5	Adjust for minimum output. Use isolation instructions.
50 MMFD	"	1615KC	Gang at min. capacity. Full open.	"	A6	Adjust for maximum output. Use isolation transformer or capacitor in series with low lead.
	Loop	1400KC	1400KC	"	A7	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF amplifier	12SK7	12SK7	6N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.-Det.-AVC	12SF7	12SF7	7AL	
4	AF Amp.	12SJ7	12SJ7	6N	
5A	Power Output	35A5	35A5	6AA	
5B	Power Output	35L6GT	35L6GT	7AC	35L6GT was substituted on all H-125 & H-126 models built after June 20, 1946.
6	Rectifier	35Z5GT	35Z5GT	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTINGHOUSE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150	V-3470	FP311	DY-2X50-150/40-25	EL-352	AF1G10D	UP6CJ41	■ Filter
B	50	150							▲ "
C	20	25					PRS25-25		Cath. Bypass
8	.1	400	RCP10W4104A	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.01	400	RCP10W2103A	TP421	S-4-01	TC-11	484-.01	DT4S1	35A5 Plate Bypass
10	.01	400	RCP10W2103A	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.005	200	RCP10W6502A	TP408	S-6-005	TC-25	484-.005	DT6D5	" "
12	.1	200	RCP10W2104A	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Screen Bypass
13	.025	200	RCP10W2253K	TP451	S-4-02	TC-12	484-.025	DT6S25	Audio Plate Decoup.
14	.04	400	RCP10W2403A	TP425	S-4-04	TC-14	484-.04	DT4S4	AVC Filter
15	.2	200	RCP10W2204A	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
16	.001	400	RCP10W1102A	TP404	S-4-001	TC-21	484-.001	DT6D1	Ant. Coupling
17	.04	200	RCP10W2403K	TP425	S-4-04	TC-14	484-.04	DT4S4	Tone Compensation
18	470	500	RCM20A471M	MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
19	47	500	RCM20A470M	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Tone Compensation
20	100	500	RCM20A101M	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
21	47	500	RCM20A470M	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.
22	47	500	RCM20A470M	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	RF Coupling
49	.02	200		TP423	S-4-02	TC-12	484-.02	DT4S2	12SW7 Screen Bypass*

CONTROLS

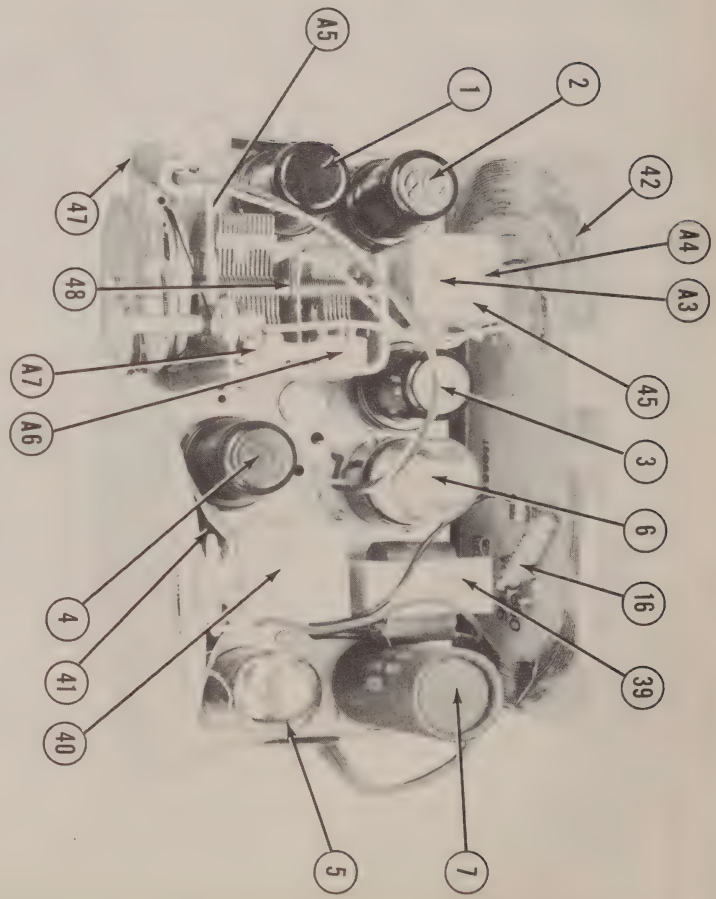
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
23A	500K	1	V-3476	TM227	D13-133X	AT-7S	Volume Control
B	Shaft		Not Req.	SS2L	S	K2.-3	Attach to 23A per instructions.
C	Switch		" "	M26	41	Sw-[illegible]	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
24	4700Ω	½	RC20AE472K	BTS-4700	Yl.-Vi.-Red RF Plate Load
25	330KΩ	½	RC20AE334M	BTS-330K	Or.-Or.-Yl. Line Isolating
26	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. Converter Grid
27	47KΩ	½	RC20AE473K	BTS-47K	Yl.-Vi.-Or. Osc. Grid
28	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. Diode Load
30	15KΩ	½	RC20AE153K	BTS-15K	Br.-Grn.-Or. Tone Compensation
31	470KΩ	½	RC20AE474K	BTS-470K	Yl.-Vi.-Yl. 1st AF Screen Dropping
32	4.7 Meg.	½	RC20AE475M	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
33	33KΩ	½	RC20AE333K	BTS-33K	Or.-Or.-Or. 1st AF Plate Load
34	82KΩ	½	RC20AE823K	BTS-82K	Gray-Red-Or. 1st AF Plate Filter
35	470KΩ	½	RC20AE474K	BTS-470K	Yl.-Vi.-Yl. Output Grid
36	180Ω	2	RC20FE181J	BW-2-180	Br.-Gray-Br. Output Cathode
37	1500Ω	1	RC30AE152K	BTA-1500	Br.-Grn.-Red Filter
38	27Ω	½	RC20AE270K	BW-2-27	Red-Vi.-Blk. Rectifier Ballast
50	47Ω	½		BT-[illegible]	Yl.-Vi.-Gr. Isolating*

*Used in later models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTINGHOUSE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
39	2850Ω	3.8Ω	380Ω	.85Ω	V-3496	A-3876	T-13842		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WESTINGHOUSE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
40	PM	3.9Ω	V-3475	ST-107‡		‡Fabricate new mounting bracket.
	COIL DIA.	VC DIA.				
41	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
42	Loop Ant.	0Ω	1.5Ω	V3466		
43	Wave Trap	46Ω		V3465		Part number includes 46 trimmer
44	Osc. Coil	.5Ω	7Ω	V3473		
45	Input IF	21Ω	21Ω	V3471	16-8866	
46	Output IF	21Ω	18.5Ω	V3472		

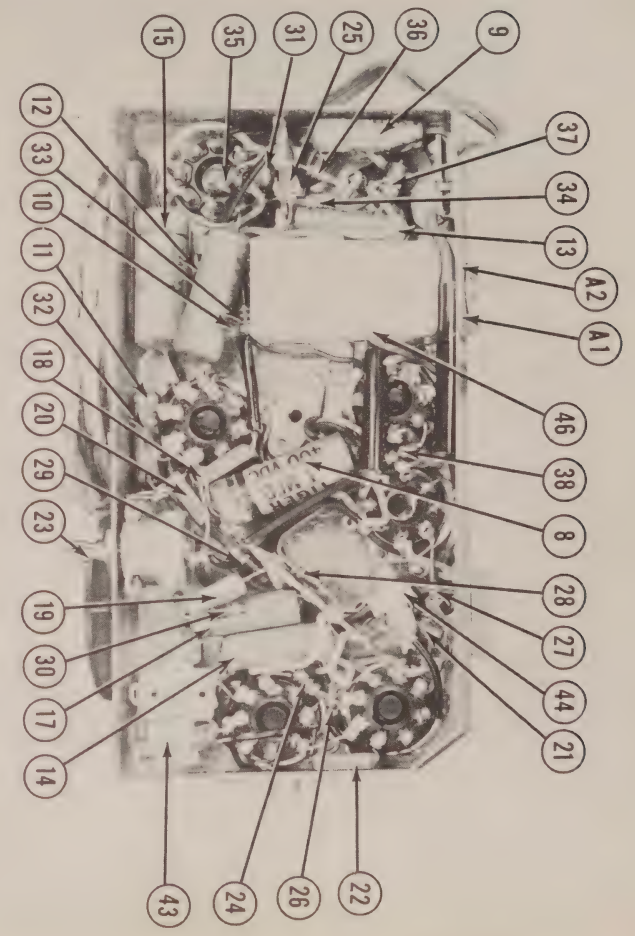
DIAL LIGHT

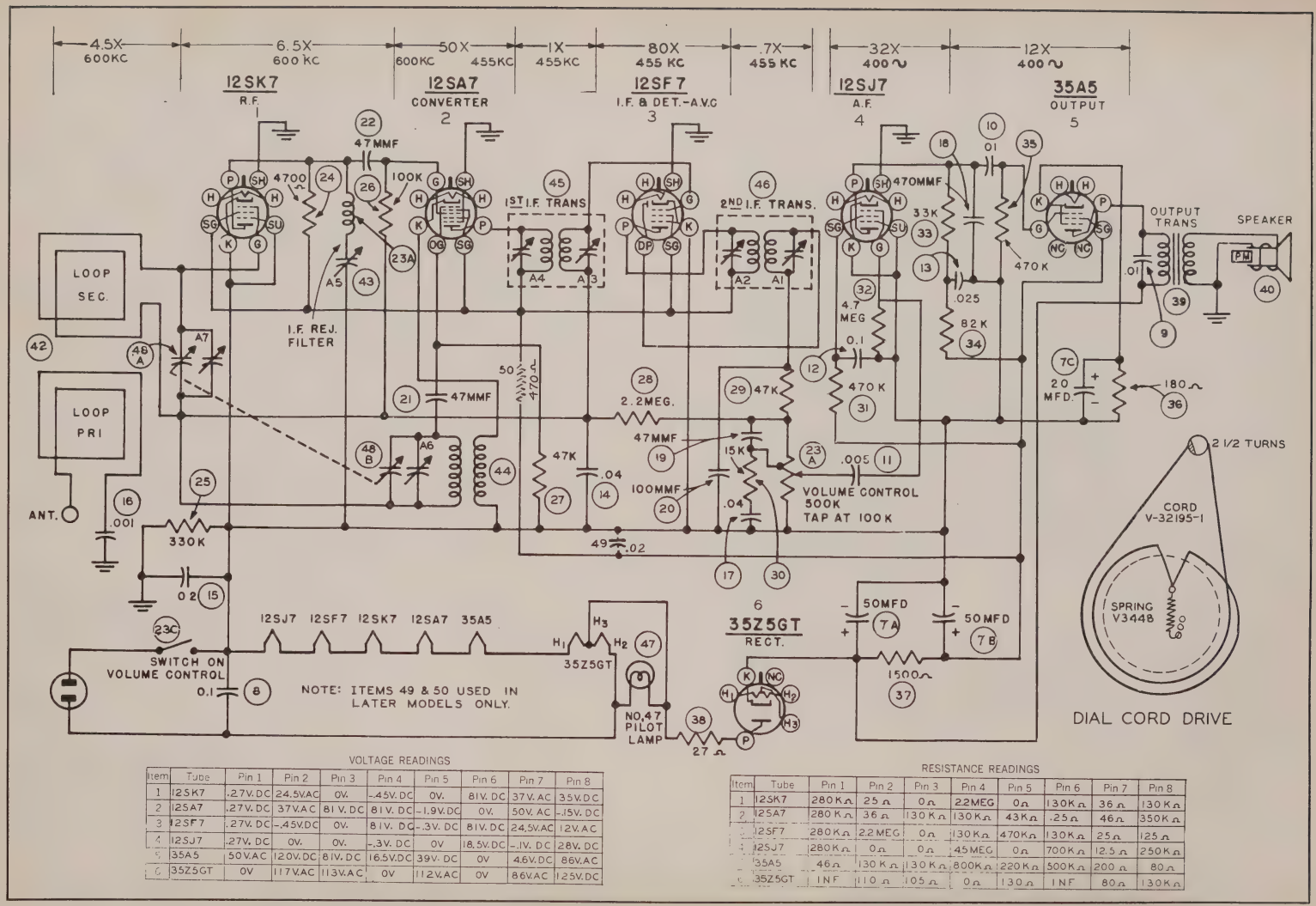
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					WESTINGHOUSE PART No.		
47	Bayonet	6-8	.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
48	Tuning Cap.	V-3474	2 Gang Variable Cap.
	Dial	V-3455-1	Model H125
	"	V-3455-2	Model H126
	Case Assby.	V-3501-1	Center
	Cover	V-3461-1	Model H-125 Left Hand
	"	V-3459-1	" " Right "
	Handle Assby.	V-3498-1	" "
	Knob	V-3481-1	" "
	Cover	V-3461-2	Model H-126 Left Hand
	"	V-3459-2	" " Right "
	Handle Assby.	V-3498-2	" "
	Knob	V-3481-2	" "

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	.27V. DC	24.5VAC	0V.	-.45V. DC	0V.	81V. DC	37 V. AC	35V.DC
2	12SA7	.27V. DC	37V.AC	81 V. DC	81 V. DC	-1.9V.DC	0V.	50V. AC	-.15V. DC
3	12SF7	.27V. DC	-.45VDC	0V.	81V. DC	-.3V. DC	81V. DC	24.5V.AC	12V.AC
4	12SJ7	.27V. DC	0V.	0V.	-.3V. DC	0V	18.5V.DC	-.1V. DC	28V. DC
5	35A5	50V.AC	120V. DC	81V. DC	16.5V.DC	39V. DC	0V	4.6V. DC	86V.AC
6	35Z5GT	0V	117V.AC	113V.AC	0V	112V.AC	0V	86V.AC	125V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	280Kn	25 n	0n	.22MEG	0n	130Kn	36 n	130Kn
2	12SA7	280Kn	36 n	130Kn	130Kn	43Kn	.25n	46n	350Kn
3	12SF7	280Kn	2.2MEG	0n	130Kn	470Kn	130Kn	25n	125n
4	12SJ7	280Kn	0n	0n	.45MEG	0n	700Kn	12.5n	250Kn
5	35A5	46n	130Kn	130Kn	800Kn	220Kn	500Kn	200 n	80n
6	35Z5GT	INF	110 n	105n	0n	130n	INF	80n	130Kn

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

OLYMPIC
MODELS 6-501W-U, 6-502U

OLYMPIC
MODELS 6-501W-U, 6-502U

OLYMPIC MODELS 6-501W

TRADE NAME	Olympic Models 6-501W-U, 6-501V-U, 6-502U
MANUFACTURER	Olympic Radio & Television Div. of Hamilton Radio Corp. 510 Ave. of the Americas, New York (11), N.Y.
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .245 Amps. @ 117V AC
TUNING RANGE—BROADCAST	535-1700KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial. Gang fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect .1 MFD capacitor in series with low lead to B- and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
50 MMFD	High side to ant. terminal on loop. Low side to B-.	1700KC	1700KC (170 on dial)	"	A5	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	1400KC	Tune in 1400 KC signal.	"	A6	" Repeat adjustments on A5 and A6.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8C	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	CO-107	2N511	M-2x40-150	TA-440	PRS150-40-40	BRD4415	Filter - Blue
B	40	150							" - Red
7	.05	400	RCP10W4503A	TP426	S-4-05	TC-15	464-.05	DT4S5	Line Filter
8	.1	400	RCP10W4104A	TP428	S-4-1	TC-1	464-.1	DT4P1	Line Isolating*
9	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	50L6 Plate Bypass
10	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
11	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	" "
12	.02	400	RCP10W4203A	TP423	S-4-02	TC-12	464-.02	DT4S2	AVC Filter
13	.02	400	RCP10W4203A	TP423	S-4-02	TC-12	464-.02	DT4S2	Osc. Tuned Circuit*
14	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	Ant. Coupling
15	330	500	RCM20A331M			1FM-335	1468-.00035		Audio Plate Bypass
16	220	500	RCM20A221M	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Grid Bypass
17	100	500	RCM20A101M	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
18	330	500	RCM20A331M			1FM-335	1468-.00035		Osc. Grid Cap.

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	500KΩ	1	PT-102	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions.
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

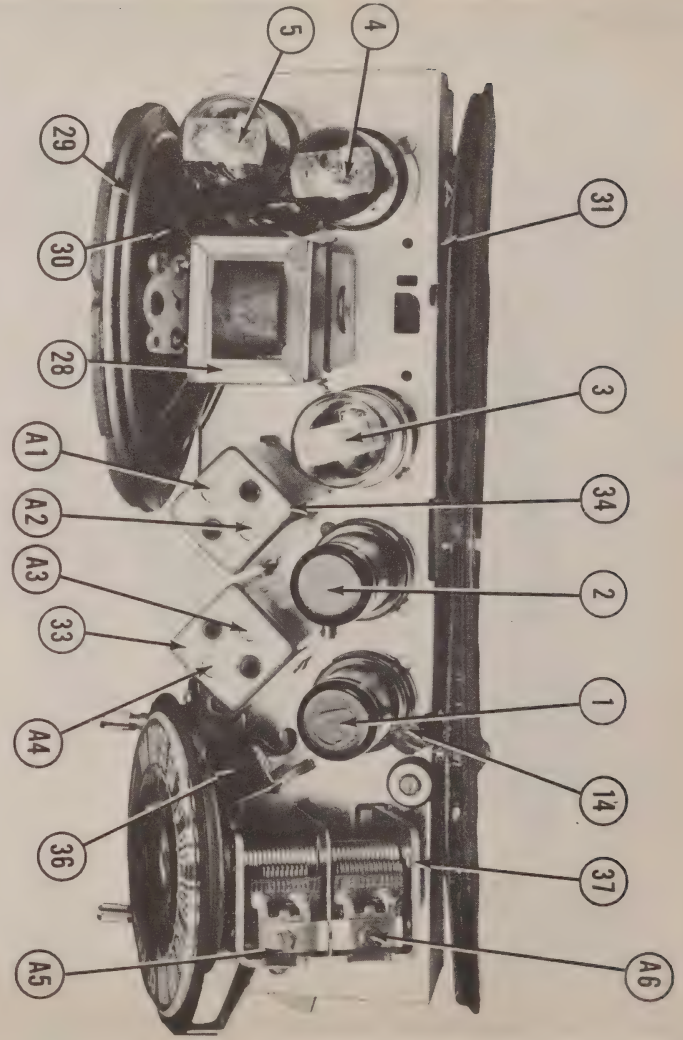
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	IDENTIFICATION CODES
20	8200Ω	½	REB822K	BTS-8200	Gray-Red-Red Osc. Grid
21	2.2 Meg.	½	REB225M	BTS-2.2 Meg	Red-Red-Grn. AVC Network
22	10 Meg.	½	REB106M	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
23	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
24	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	120Ω	½	RBB121K	BW-B-120	Br.-Red-Br. Output Cathode
26	220KΩ	½	REB224M	BTS-220K	Red-Red-Yl. Line Isolating - See Note 1
27	220Ω	1	REC221K	BW-1-220	Red-Red-Br. Pilot Light Shunt

Note 1 - Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: OLYMPIC PART No.	STANCOR PART No.	THORDARSON PART No.		INSTALLATION NOTES
28	2250Ω	3.5Ω	140Ω	.6Ω	Part of SK-110	A-3676†	T-14S82†		†Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA OLYMPIC PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
29	450Ω	3.5Ω	SK110	ST-450		
	CONE DIA.	VC DIA.				
30	4-13/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA OLYMPIC PART No.	MEISSNER PART No.	INSTALLATION NOTES
31	Loop Ant.	0	1.3Ω	LP-136		
32	Osc. Coil		6.5Ω	CL-569	14-1040	
33	Input IF	11.5Ω	11.5Ω	TR186	16-6666	
34	Output IF	11.5Ω	14Ω	TR186	16-6667	
35	RF Choke					*Not used in all models.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA OLYMPIC PART No.		INSTALLATION NOTES
36	Bayonet	6-8	0.15	Brown	BU-187		Type 47

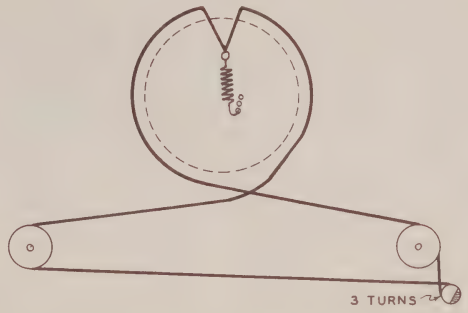
CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

OLYMPIC - MODELS 6-501W-U, 6-502U.

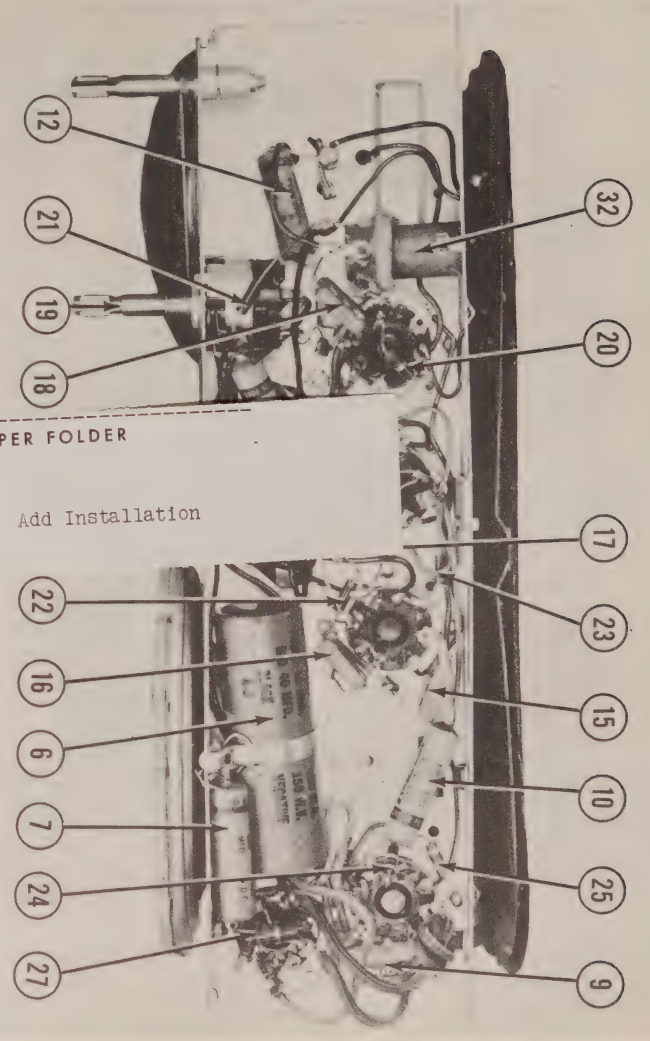
Page 3 - Item 29 JENSEN Part Listing should be ST-450 Mod. H5-S1. Add Installation Note - "†Fabricate mounting bracket."

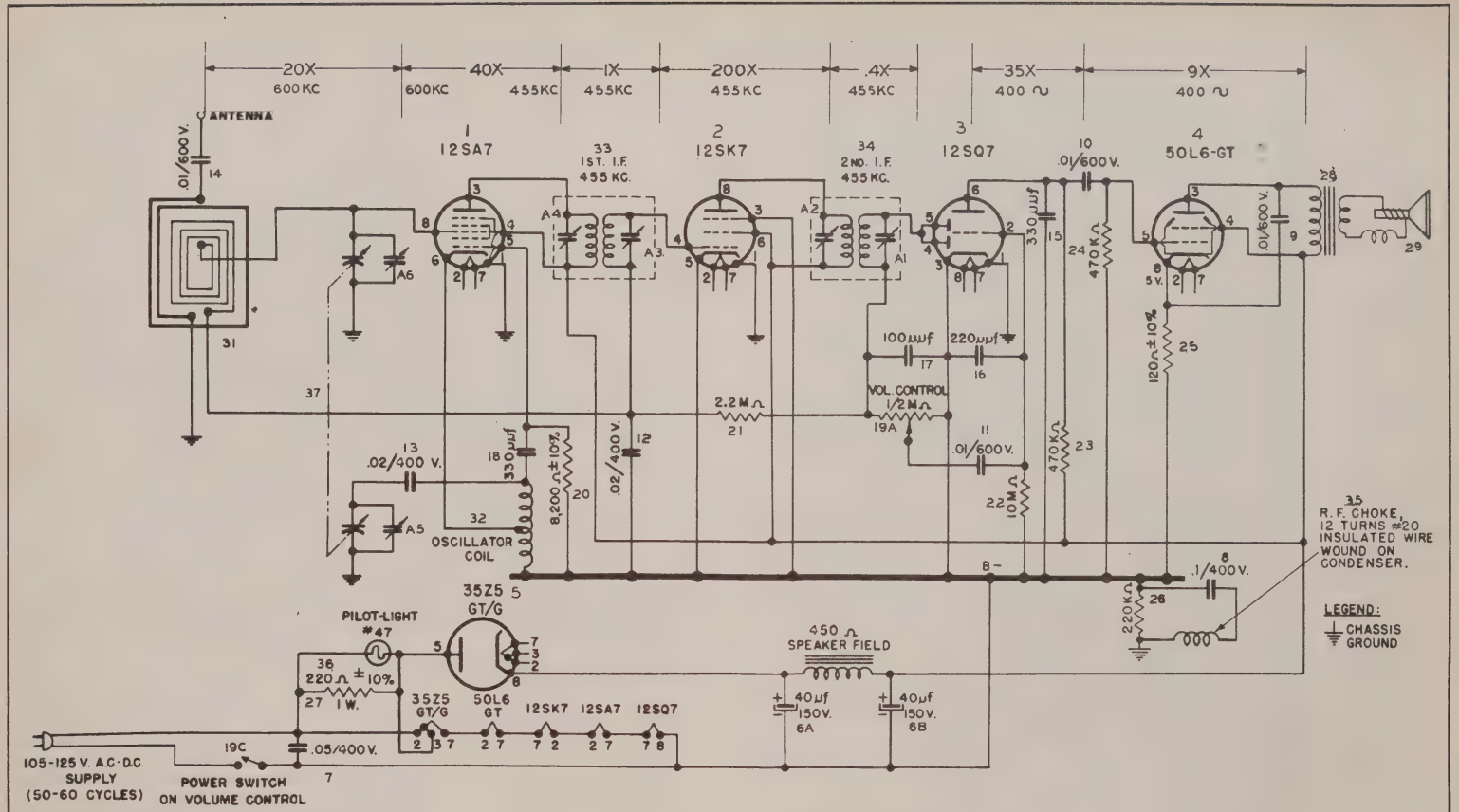
	Pointer	KA-353	Ivory
	"	PO-259W	Moulded Walnut
	"	PO-259V	" Ivory

DIAL CORD DRIVE



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	23.7V.AC	83V.DC	83V.DC	- 4.6V.DC	0V.	12.2V.AC	0V.
2	12SK7	0V.	23.7V.AC	0V.	0V.	0V.	83V.DC	35.6V.AC	83V.DC
3	12SQ7GT	0V.	-.5V. DC	0V.	-.53V.DC	-.53V.DC	43V. DC	12.2V.AC	0V.
4	50L6GT	0V.	87V.AC	78 V. DC	83V. DC	0V.	0V.	35.6V.AC	4.6V. DC
5	35Z5GT	0V.	117V.AC	112V.AC	0V.	112 V.AC	117 V.AC	87V.AC	117V.DC

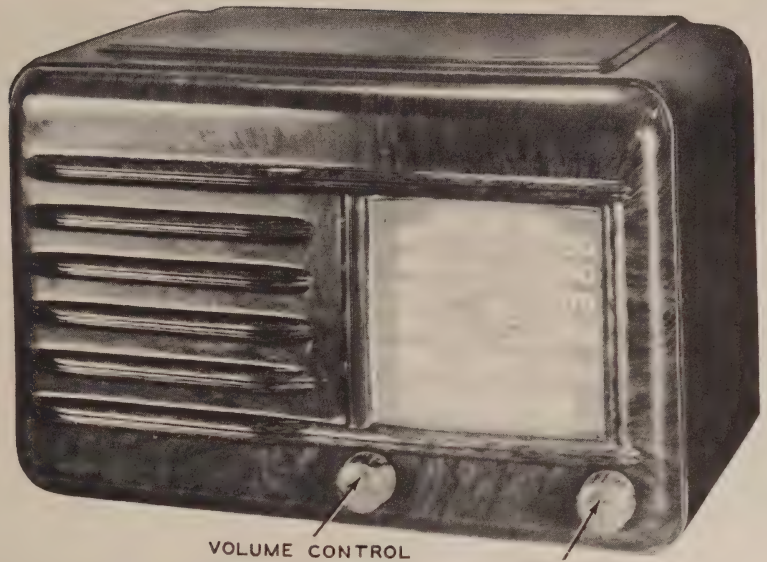
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0 Ω	24.5 Ω	65K Ω	65K Ω	8500 Ω	1 Ω	12.5 Ω	2.3MEG
2	12SK7	0 Ω	24.5 Ω	0 Ω	2.3MEG	0 Ω	65K Ω	37K Ω	65K Ω
3	12SQ7GT	0 Ω	7.5MEG	0 Ω	500 K Ω	500K Ω	535K Ω	12.5 Ω	0 Ω
4	50L6GT	INF	82 Ω	65K Ω	65K Ω	425K Ω	INF	37 Ω	111 Ω
5	35Z5GT	INF	108 Ω	105 Ω	0 Ω	105 Ω	108 Ω	82 Ω	65K Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

GENERAL TELEVISION
MODEL 14 A 4 F



GENERAL TELEVISION
MODEL 14 A 4 F

GENERAL TELEVISION MODEL 14A4F

TRADE NAME	General Television Model 14A4F
MANUFACTURER	General Television and Radio Corp., 2701 Lehmann Court, Chicago, Ill.
TYPE SET	Battery Operated Superheterodyne
TUBES (FOUR)	Types, 1LA6 Converter, 1LN5 IF Amp., 1LD5 Det.-AVC-AF, 3LF4 Power Output.
POWER SUPPLY	90 Volt "B" Battery & 1½ Volt "A" Battery in Pack Form
TUNING RANGE—BROADCAST	530KC-1630KC RATING - .260 Amp. @ 1.5V - .012 Amp. @ 87V

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #6 (grid) of 1LA6. Low side to chassis.	455KC	Point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200MMFD	High side to ant (blue) lead. Low side to chassis.	1500KC	1500KC	"	A5	" " " "
"	"	1400KC	Tune in 1400 KC signal.	"	A6	" " " "
"	"	600KC	Tune in 600KC signal.	"	A7	" " " "
						Repeat adjustments on A6 and A7 until no further improvement can be obtained.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: GENERAL TELEVISION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LA6	1LA6	7AK	
2	IF Amp.	1LN5	1LN5	7A0	
3	Det.-AVC-AF	1LD5	1LD5	6AX	
4	Power Output	3LF4	3LF4	6Bn	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GENERAL TELEVISION PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	150		TC42	M-10-150	UT-121	PRS150-10	BR1215	RF Bypass Pwr. Supp.
6	.002	600		TP405	S-6-002	TC-22	684-.002	DT6D2	3LF4 Plate Bypass
7	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
8	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	" "
9	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Screen Bypass
10	.01	400		TP421	S-4-01	TC-11	454-.01	DT4S1	IF Grid Cap.
11	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	Conv. Screen Bypass
12	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Filter
13	100	500		MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
14	250	500		MC240	MO.5-325	1FM-328	1468-.00025	5W5T25	RF Bypass Vol. Cont.
15	100	500		MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cap.

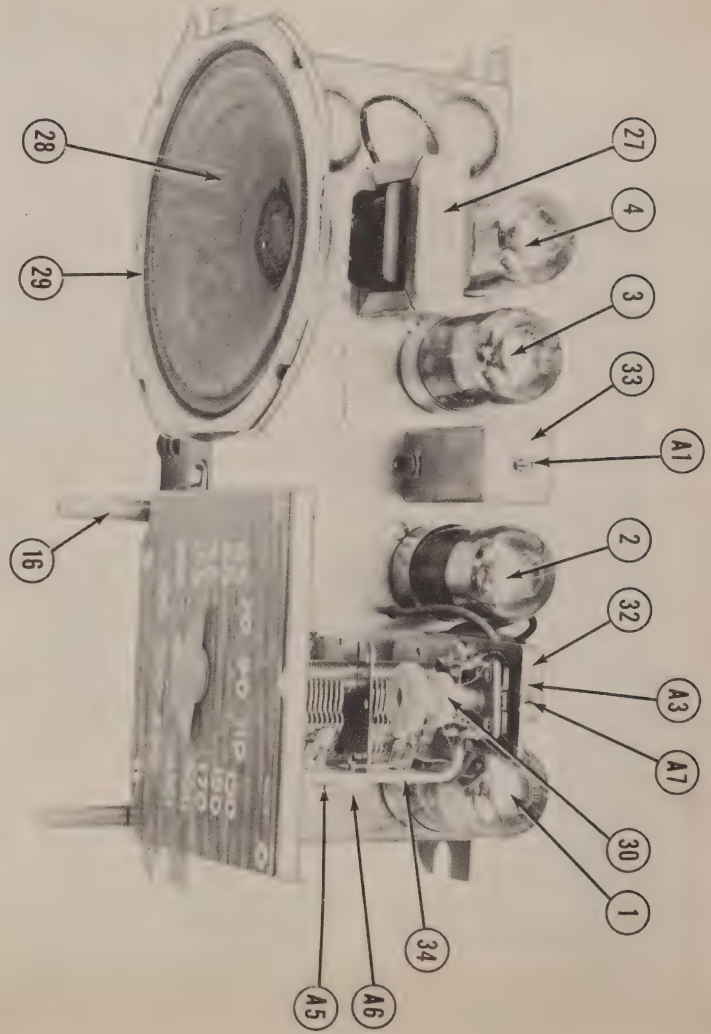
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GENERAL TELEVISION PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	2 Meg.	1	20-4 (691)	MR55	D13-139	M-66-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 16A per instructions.
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GENERAL TELEVISION PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
17	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Osc. Grid
18	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Osc. Screen Dropping
19	6 Meg.	½		BTS-5.6 Meg.	Blue-Blk.-Grn. AVC Network
20	6 Meg.	½		BTS-5.6 Meg.	Blue-Blk.-Grn. IF Grid Bias
21	6 Meg.	½		BTS-5.6 Meg.	Blue-Blk.-Grn. 1st AF Screen Dropping
22	6 Meg.	½		BTS-5.6 Meg.	Blue-Blk.-Grn. 1st AF Grid
23	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
24	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
25	390Ω	½		BW-2-390	Or.-White-Br. Bias
26	50KΩ	½		BTS-47K	Grn.-Blk.-Or. 1st AF Series Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GENERAL TELEVISION PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
27	4500Ω	3.2Ω	440Ω	.5Ω		A-3877*	T-13S39*		*Bend mounting tabs down, file slots and mount on ori inal bracket.

SPEAKER

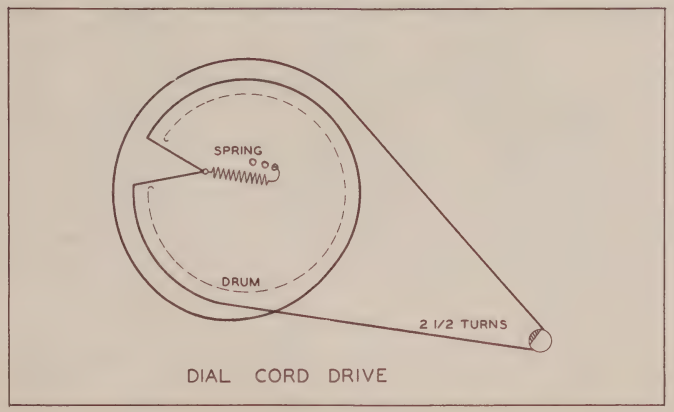
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GENERAL TELEVISION PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
28	PM	3.2Ω		ST-135		
	CONE DIA.	VC DIA.				
29	4-5/8"	1/2"	NOT READILY	REPLACEABLE - USE COMPLETE SPEAKER UNIT		

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	GENERAL TELEVISION PART No.	MEISSNER PART No.	
30	Ant. Coil	32.5Ω	4Ω			Slug Adjustable
31	Osc. Coil	1Ω	5.5Ω		14-1040	
32	Input IF	11Ω	11Ω		16-6668	
33	Output IF	11Ω	11Ω		16-6669	

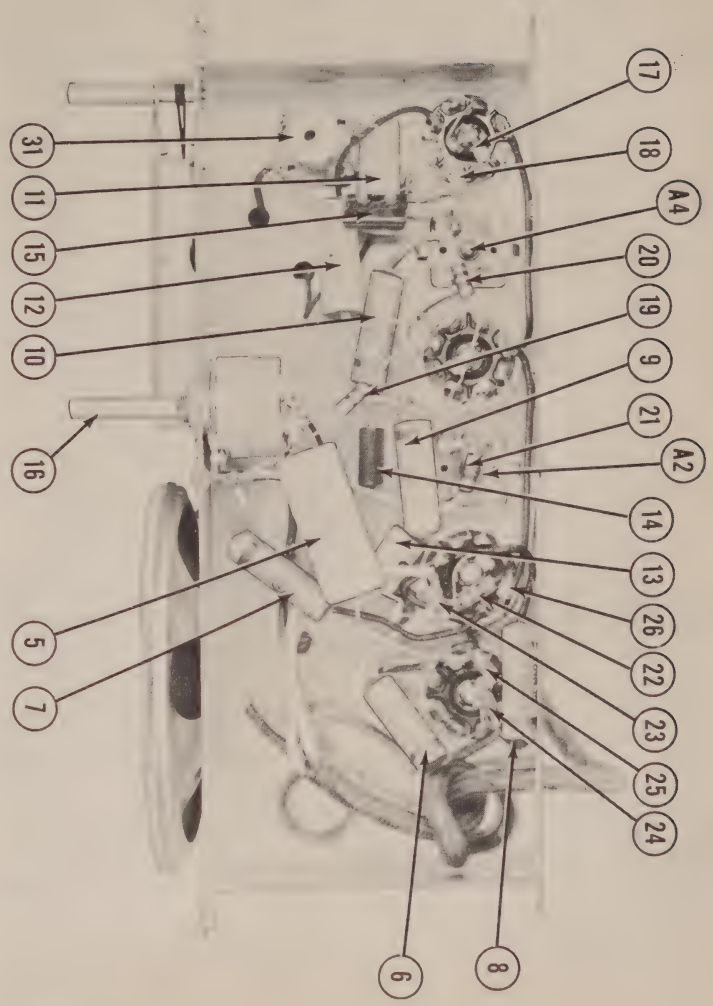
MISCELLANEOUS

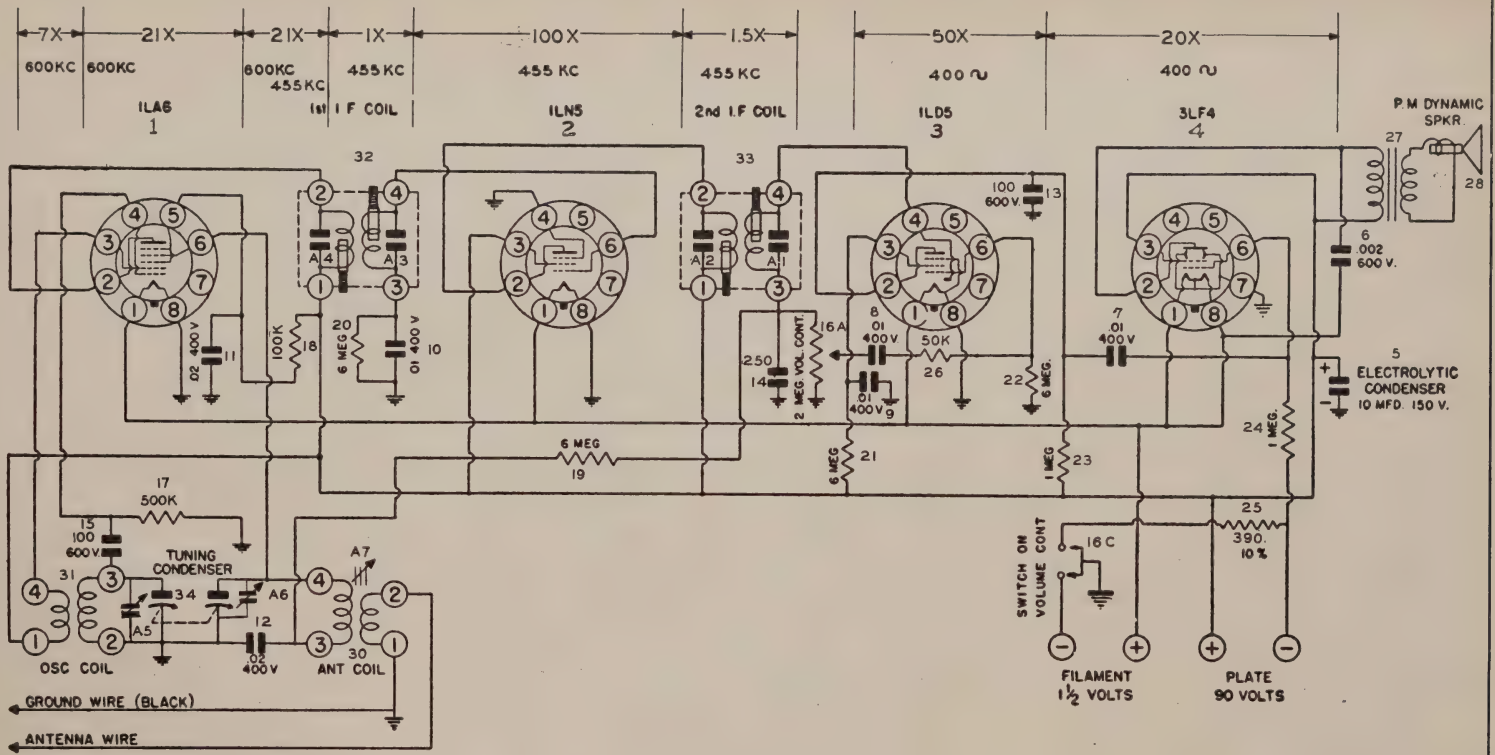
ITEM No.	PART NAME	GENERAL TELEVISION PART No.	NOTES
34	Tuning Cap.		2 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	1.5V. DC	87V.DC	87V.DC	0V.	33.5V.DC	0V.	0V.	0V.
2	1LN5	1.5V. DC	87V.DC	87V.DC	0V.	0V.	0V.	0V.	0V.
3	1LD5	1.5V. DC	15.8V.DC	11.1V DC	-.07V.DC	0V.	-.02V.DC	-.02V. DC	0V.
4	3LF4	1.5V. D C	85V.DC	87V.DC	0V.	0V.	-1.1V. DC	0V.	1.5V DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	1.7Ω	125KΩ	125KΩ	460KΩ	225KΩ	7.5MEG	INF	0Ω
2	1LN5	1.7Ω	125KΩ	125KΩ	0Ω	INF	7 MEG	7.5MEG	0Ω
3	1LD5	1.7Ω	1.6MEG	7.5 MEG	2.3 MEG	INF	6 MEG	6MEG	0Ω
4	3LF4	1.7Ω	125KΩ	125KΩ	0Ω	0Ω	1.2MEG	0Ω	1.7Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to ground.

1 - DC Voltage measurements are at 20,000 ohms per volt.

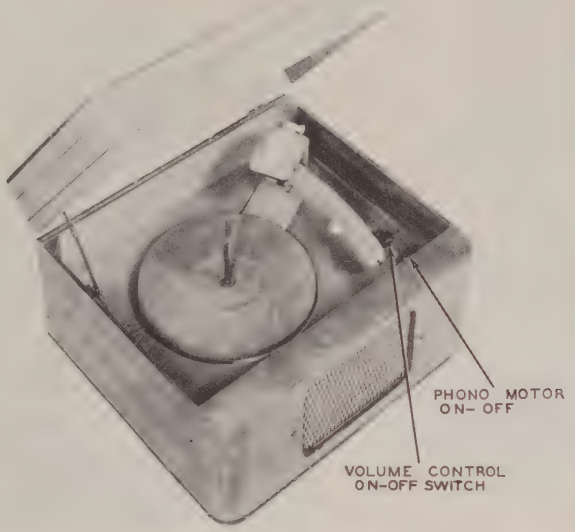
2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

5 - Volume control at maximum, no signal applied for voltage measurements.

MANTOLA
MODEL R630-RP



MANTOLA MODEL R630-RP

TRADE NAME	Mantola Model R630-RF
SUPPLIER	The B. F. Goodrich Co.,'500 South Main Street, Akron, Ohio
TYPE SET	AC Operated Automatic Record Changer with 3 Tube Amp. and Speaker
TUBES (THREE)	Types 14B6 Audio Amp., 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-125 Volts AC Rating .240 Amps. @ 117 Volts AC
TUNING RANGE—BROADCAST	SHORT WAVE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14B6	0 V.	73V DC	-.62VDC	0V.	0 V.	0 V.	0V.	12.8VAC
2	50A5	82V.AC	113V.DC	121V.DC	0 V.	0 V.	0 V.	7.8 V.DC	12.8VAC
3	35Y4	82VAC	115VAC	0V.	0 V.	0 V.	0 V.	125VDC	117VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14B6	0 Ω	440KΩ	8MEG	0 Ω	0 Ω	0 Ω	0 Ω	145.5Ω
2	*50A5	60Ω	120KΩ	120KΩ	I NF	I NF	.5MEG	140 Ω	14.5 Ω
3	35Y4	180Ω	250Ω	I NF	I NF	I NF	I NF	120KΩ	225 Ω

DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
Socket connections are shown as bottom views.
Measured values are from socket pin to common negative.

4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Audio Amp.	14B6	14B6	8W	
2	Power Output	50A5	50A5	6AA	
3	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MANTOLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4(A)	50	150	67A10	2N521	M-50+30-150	TA-530	PRS150-40-40	BRD3515	Filter - Red
(B)	30	150							" - Yellow
5	.05	400	64B1-22	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
6	.1	400	64B1-20	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
7	.02	400	64B1-24	TP423	S-4-02	TC-12	484-.02	DT4S2	50A5 Plate Bypass
8	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
9	.005	600	64B1-12	TP406	S-6-005	TC-25	684-.005	DT6D5	" "
10	.1	400	64B1-20	TP428	S-4-1	TC-1	484-.1	DT4P1	Phono Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
11(A)	1 Meg.	1	75b1-9	MK402	D13-137	AM-53-4	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 11A per instructions
(C)	Switch		" "	M23	41	SW-A	" " " " "

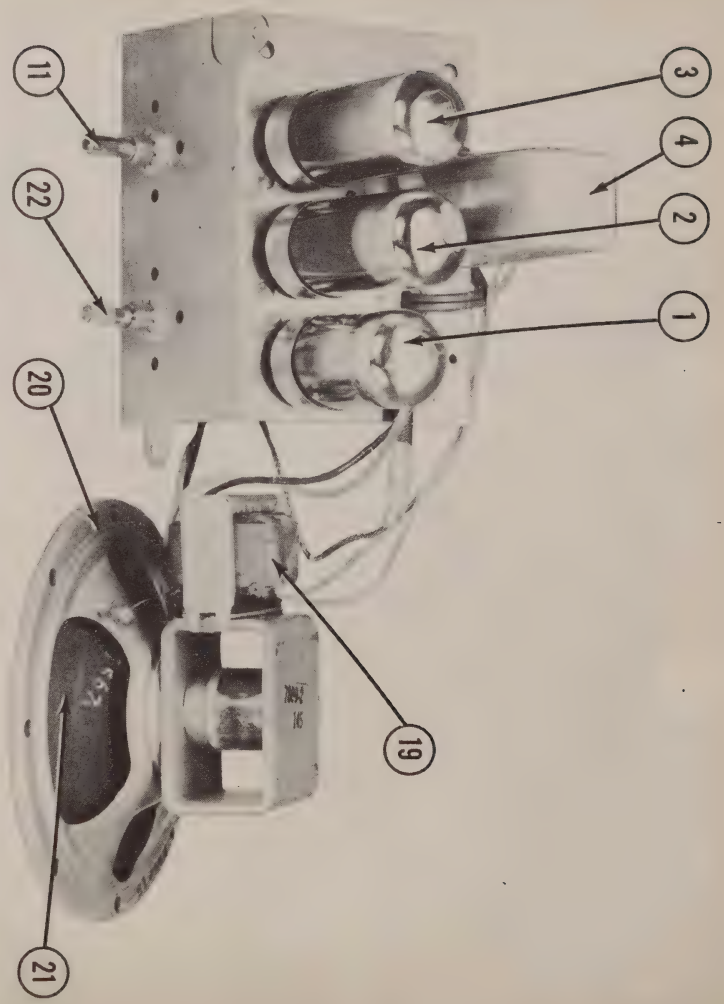
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	IRC PART No.	IDENTIFICATION CODES
12	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
13	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. 1st. AF Plate Load
14	470KΩ	½	60b8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
15	150Ω	1	60B14-151	BW-½-150	Br.-Grn.-Br. Output Cathode
16	1500Ω	1	60b14-152	BTA-1500	Br.-Grn.-Red Filter
17	130Ω	5	61A3-4		Line Dropping
18	33Ω	1	60B14-330	BW-1-33	Or.-Or.-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MANTOLA PART No.	STANCOR PART No.	THORDARSON PART No.		INSTALLATION NOTES
19	3400Ω	2.9Ω	265Ω	1Ω	78b9-2	A-3856*	T-13S39*		*Bend mounting tabs down.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	MANTOLA PART No.	JENSEN PART No.		
20	PM	2.5Ω	76B9-2	ST-107		
	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-ONE COMPLETE SPEAKER UNIT.			
21	4-13/16"	5/8"				

MISCELLANEOUS

ITEM No.	PART NAME	MANTOLA PART No.	NOTES
22	Switch	77A5-2	Phono Motor On-Off
	Knob	33A11-1	Switch
	"	33A11-2	Volume
	Crystal	409A1	Cartridge
	Motor	407B3	60 Cycle 115 Volt AC (Types 407B1 & 407B2 also used)

DISASSEMBLY INSTRUCTIONS

1 - Remove volume control knob and on-off switch knob.

2 - Disconnect phono motor plug.

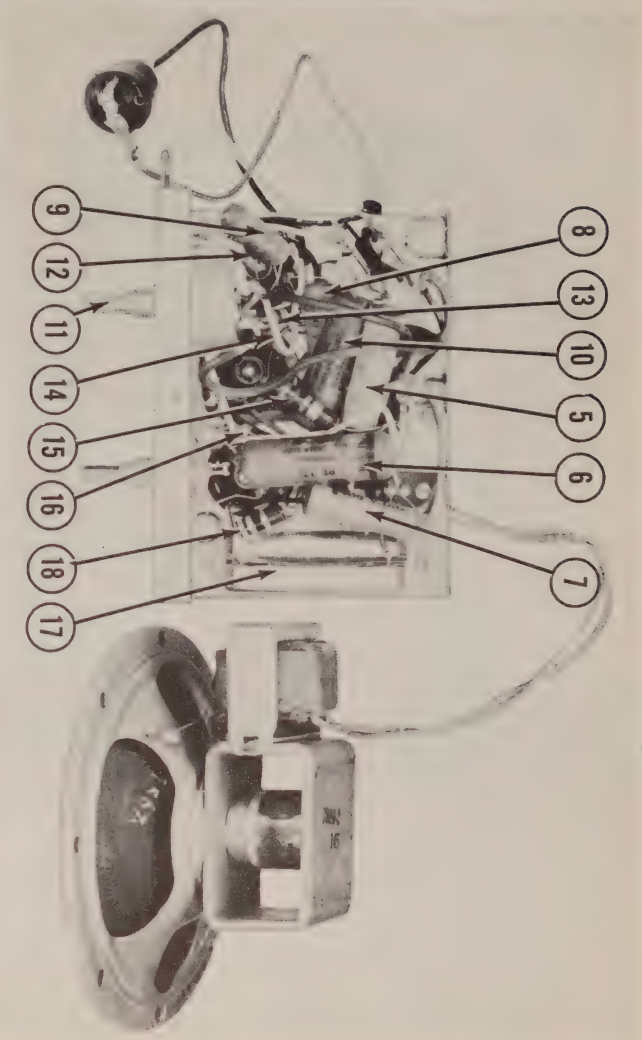
3 - Disconnect speaker plug from chassis.

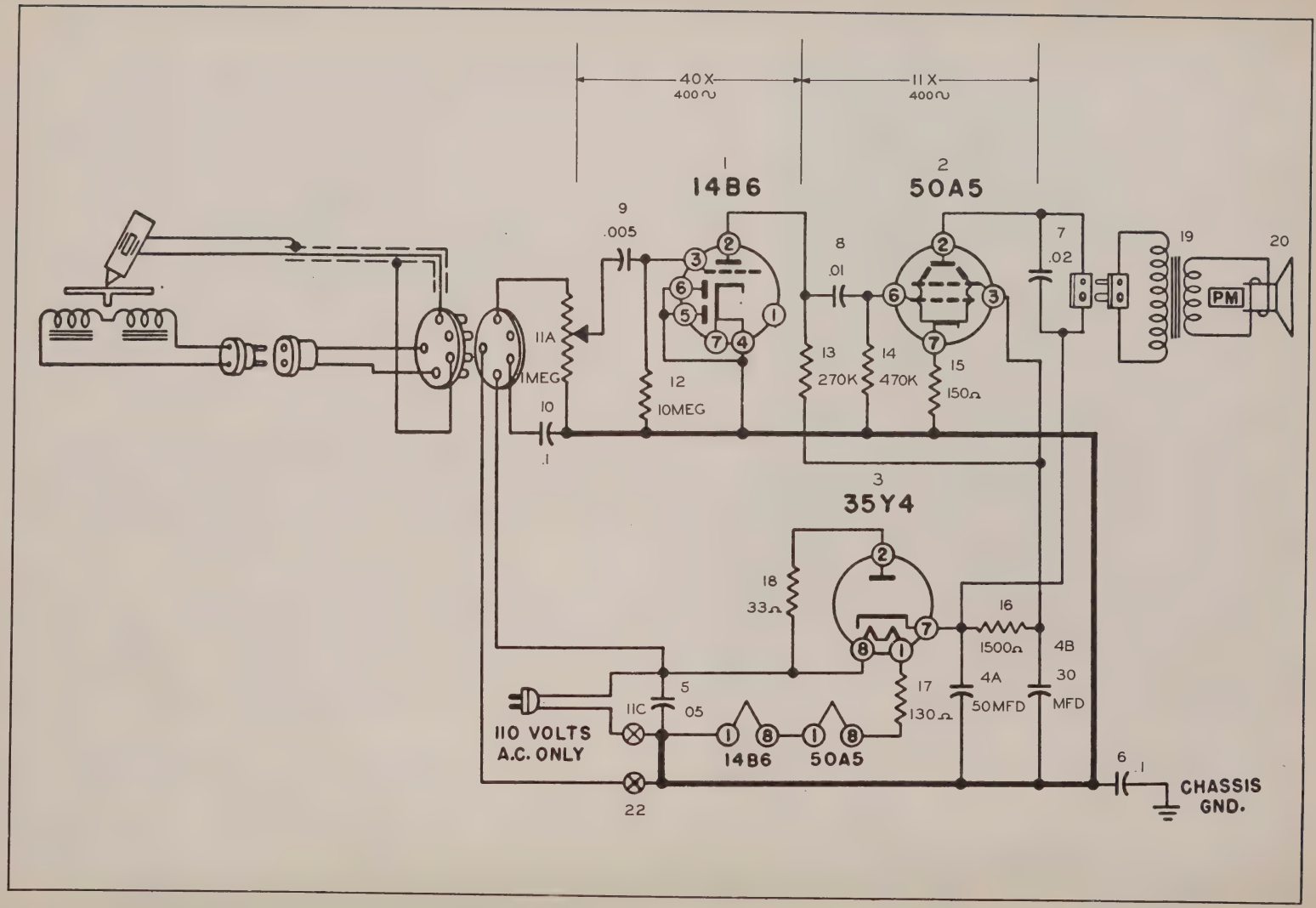
4 - Unsolder phono-pickup leads.

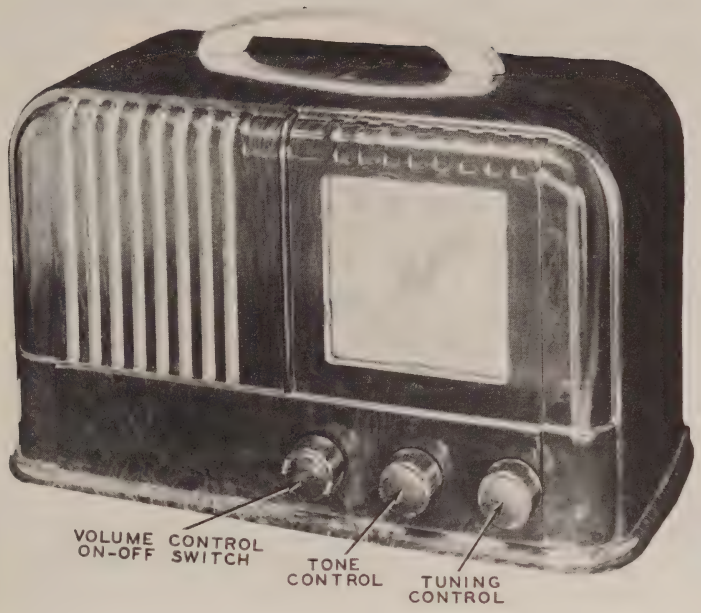
5 - Remove the two Phillips head screws holding chassis to cabinet, allowing chassis to be removed.

6 - Remove the two nuts holding the speaker to cabinet allowing speaker to be removed.

CHASSIS—BOTTOM VIEW




40X
400Ω
11X
400Ω
1
14B6
2
50A5
9
.005
8
.01
7
.02
19
20
PM
11A
1MEG
10
.1
12
10MEG
13
270K
14
470K
15
150Ω
3
35Y4
18
33Ω
16
1500Ω
4B
17
130Ω
4A
50MFD
30
MFD
5
11C
05
110 VOLTS
A.C. ONLY
14B6
50A5
6
.1
CHASSIS
GND.
22



ARVIN
MODELS 664, 664A

ARVIN
MODELS 664, 664A

ARVIN MODELS 664, 664A

TRADE NAME	Arvin Models 664, 664A (Chassis RE-206)
MANUFACTURER	Moblitt-Sparks Industries, Inc., Columbus, Indiana
TYPE SET	AC - DC Superheterodyne Self-Contained Loop Antenna
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 14R7 IF-Det.-AVC, 12SK7GT Audio Amp., 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .330 Amps. @ 117 VAC
TUNING RANGE—BROADCAST	540-1600KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	Point of no interfering signal.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with ground lead and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1400KC	1400KC	"	A5	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.
	"	"	"	"	A6, A7	"

Set pointer in vertical position with gang fully closed (plates in full mesh.) Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ARVIN PART No.	STANDARD REPLACEMENT		
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	6AD	
3	IF-Det.-AVC	14R7	14R7	6AE	
4	Audio Amp.	12SK7GT	12SK7GT	8N	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ARVIN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
7A	40	150	A19239	FP-306	DY-40+20-150	EL-24	AF88D	UP4215	■ Filter
B	20	150							▲ "
8	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	35L6 Plate Bypass
10A	.05	200		TP426	S-4-05	TC-15	484-.05	DT4S5	Tone Compensation*
B	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	" " †
11	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	Neg. Feedback *
12A	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Screen Bypass*
B	.05	200		TP426	S-4-05	TC-15	484-.05	DT4S5	" " " †
13	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	" " "
14	.005	400		TP408	S-6-005	TC-25	484-.005	DT6D5	Audio Coupling
15	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	" "
16	.05	200		TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
17	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
18	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Coupling
19	250	500		MC240	MO.5-325	1FM-325	1468-.00025	SWST25	Hum Neut. Cap.
20	250	500		MC240	MO.5-325	1FM-325	1468-.00025	SWST25	Audio Plate Bypass
21	250	500		MC240	MO.5-325	1FM-325	1468-.00025	SWST25	RF Bypass Vol. Cont.
22	100	500		MC235	MO.5-31	1FM-31	1468-.0001	SWST1	Osc. Grid Cap.
23	14	500							Conv. Grid Cap. †

* Used in initial production
† Used in later production.

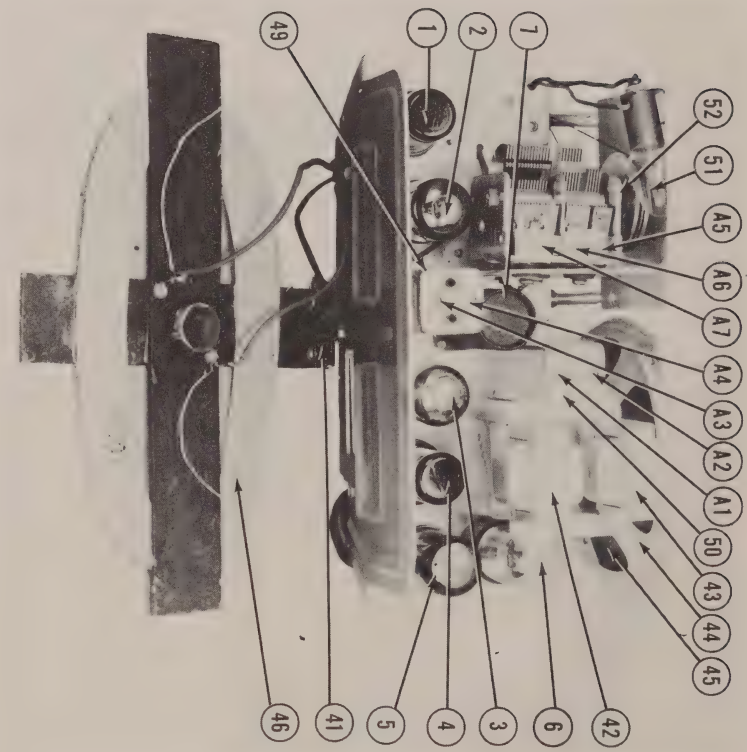
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
24A	500KΩ	1	C19224	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 24A per instructions.
C	Switch		Not Req.	M26	41	SW-A	" " " " "
25A	20KΩ	1	C19279	UM124	D11-120	AM-40-S	Tone Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 25A per instructions.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	
26	330KΩ	½		BTS-330K	Or.-Or.-Yl. Line Isolating
27	6800Ω	½		BTS-6800	Blue-Gray-Red Converter Grid ‡
28	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
29	6.8 Meg.	½		BTS-6.8 Meg	Blue-Gray-Grn. AVC Network
30	2.2 Meg.	½		BTS-2.2 Meg	Red-Red-Grn. AVC Network
31	6.8 Meg.	½		BTS-6.8 Meg	Blue-Gray-Grn. 1st AF Grid
32	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Plate Load
33	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.1st AF Screen Dropping
34	1000Ω	½		BTS-1000	Br.-Blk.-Red " " Cathode ‡
35	6800Ω	½		BTS-6800	Blue-Gray-Red Feedback ‡
36	10KΩ	½		BTS-10K	Br.-Blk.-Or. Feedback ‡
37	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
38	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
39	15Ω	½		BW-½-15Ω	Br.-Grn.-Blk. Surge Limiter
40	33KΩ	½		BTS-33K	Or.-Or.-Or. RF Plate Load Shunt ‡

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONTINUED)

41	10KΩ	‡		BTS-10K	Br.-Blk.-Or. Ant. Shunt

‡ Not used in all models

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	ARVIN PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
42	.041A	215Ω	8.5H	AC18583-1	C-1723	T-14C6211	††Cut U-Shaped Bracket and Spread to Mount Choke

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
43	2050Ω	3.05Ω	110Ω	.38Ω	AC18582-1	A-3876	T-14882		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.		
44	FIELD FM	VC IMP. 3.06Ω	C-18550	ST-107#		#Drill and tap magnet frame to match original mounting or fabricate new mounting assembly.
45	CONE DIA. 5-5/32"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	
46	Loop Ant.	0Ω	.8Ω	AC18579-1		
47	RF Coil	4.5Ω	11Ω	AC18538-1		
48	Osc. Coil	.8Ω	10.5Ω	AC18580-1		
49	Input IF	12.5Ω	12.5Ω	AC18581-1	16-6686	
50	Output IF	15.5Ω		AC18575-1		

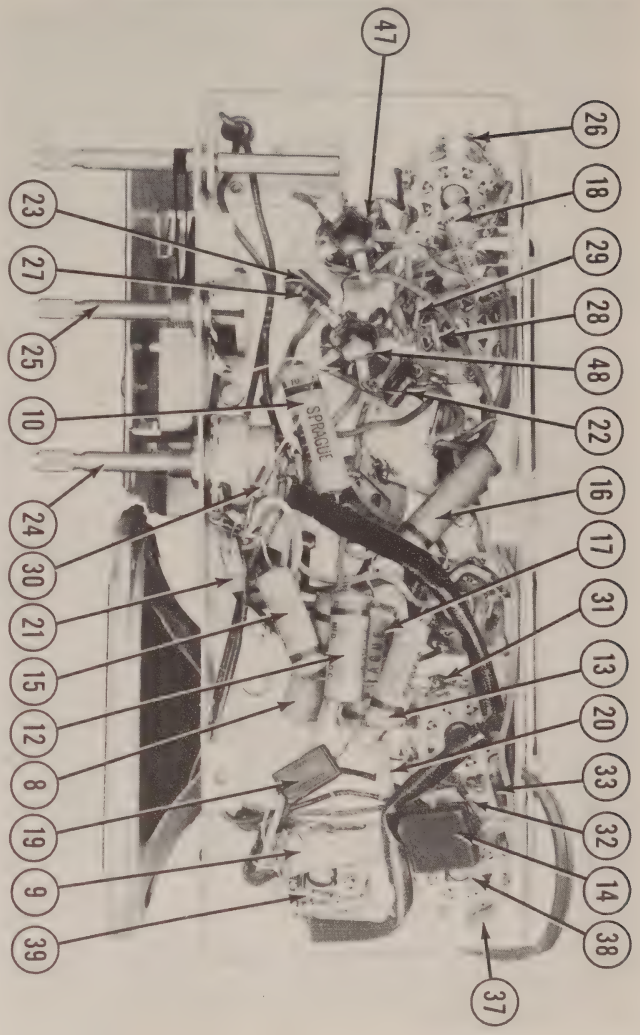
DIAL LIGHT

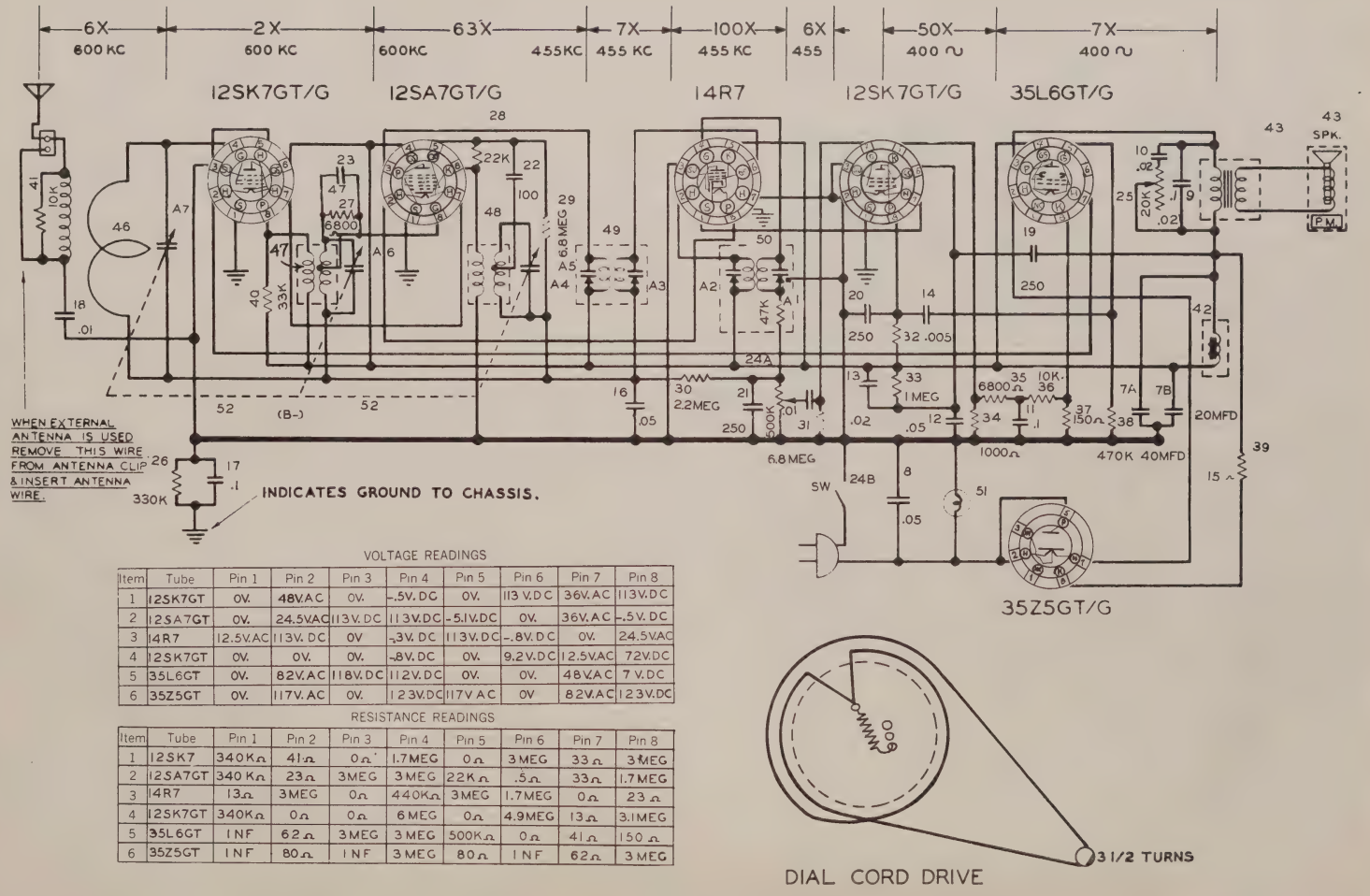
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ARVIN PART No.		
51	Screw	110	.3		47138		Type C-7

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
52	Tuning Cap.	B18584	3 Gang Variable
	Cabinet	D18422-1	Walnut
	"	D18422-2	Ivory
	Knob	A19242-1	Walnut
	"	A19242-2	Ivory
	Dial Scale	C18432	
	Dial Crystal	A18272	
	Dial Pointer	A18572	
	Handle	A19422	

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	48V.AC	0V.	-.5V. DC	0V.	113 V.DC	36V. AC	113V.DC
2	12SA7GT	0V.	24.5VAC	113V. DC	113V.DC	-5.1V.DC	0V.	36V. AC	-.5V. DC
3	14R7	12.5V.AC	113V. DC	0V	-3V. DC	113V.DC	-.8V.DC	0V.	24.5V.AC
4	12SK7GT	0V.	0V.	0V.	-8V. DC	0V.	9.2V.DC	12.5V.AC	72V.DC
5	35L6GT	0V.	82V.AC	118V.DC	112V.DC	0V.	0V.	48V.AC	7 V.DC
6	35Z5GT	0V.	117V. AC	0V.	123V.DC	117V AC	0V	82V.AC	123V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	340KΩ	41Ω	0Ω	1.7MEG	0Ω	3MEG	33Ω	3MEG
2	12SA7GT	340 KΩ	23Ω	3MEG	3MEG	22KΩ	.5Ω	33Ω	1.7MEG
3	14R7	13Ω	3MEG	0Ω	440KΩ	3MEG	1.7MEG	0Ω	23Ω
4	12SK7GT	340KΩ	0Ω	0Ω	6MEG	0Ω	4.9MEG	13Ω	3.1MEG
5	35L6GT	INF	62Ω	3MEG	3MEG	500KΩ	0Ω	41Ω	150Ω
6	35Z5GT	INF	80Ω	INF	3MEG	80Ω	INF	62Ω	3MEG

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ZENITH
MODELS 6D015, 6D015Y, 6D030
(CHASSIS NO. 6C05, 6C05Z)

ZENITH
MODELS 6D015, 6D015Y, 6D030
(CHASSIS NO. 6C05, 6C05Z)

ZENITH MODEL 6D015Y

TRADE NAME	Zenith Models 6D015, 6D015Y, 6D030 (Chassis No. 6C05, 6C05Z)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 12SJ7 RF Amp., 12SA7GT Converter, 12BA6 IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volt AC-DC Rating .250 Amps. @ 117V AC
TUNING RANGE—BROADCAST	535-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, use isolating capacitor in series with ground lead and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop Connect output of signal generator to one turn loop and radiate signal into wave-magnet.	"	"	"	A5	Adjust for minimum output.
	"	1600KC	1600KC	"	A6	Adjust for maximum output.
	"	1400KC	1400KC	"	A7	" " " "

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amplifier	12SJ7	12SJ7	8S	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amplifier	12BA6	12BA6		
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	150	22-1519	FP357	DY-40+30+20-150	EL-224	AF844D	UP3CJ44	Filter
B	20	150							▲ Filter
C	40	150							■ "
8	.05	200	22-1017	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating
10	.03	400	22-1049	TP424	S-4-03	TC-13	484-.03	DT4S3	35L6 Plate Bypass
11	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
12	.0005	600	22-854	TP403	S-6-0005	TC-35	1468-.0005	DT6T5	Audio Plate Bypass
13	.002	600	22-492	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
14	.04	200	22-1202	TP425	S-4-04	TC-14	484-.04	DT4S4	Tone Compensation
15	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
16	250	500	22-182	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	35L6 Plate Bypass*
17	200	500	22-953	MC237	MO.5-32	1FM-32	1468-.0002	5W5T2	RF Bypass Diode
18	100	500	22-162	MCB235	MOS.5-31	MS-31	1469-.0001	5R5T1	RF Coupling

Not used in all models.

CONTROLS

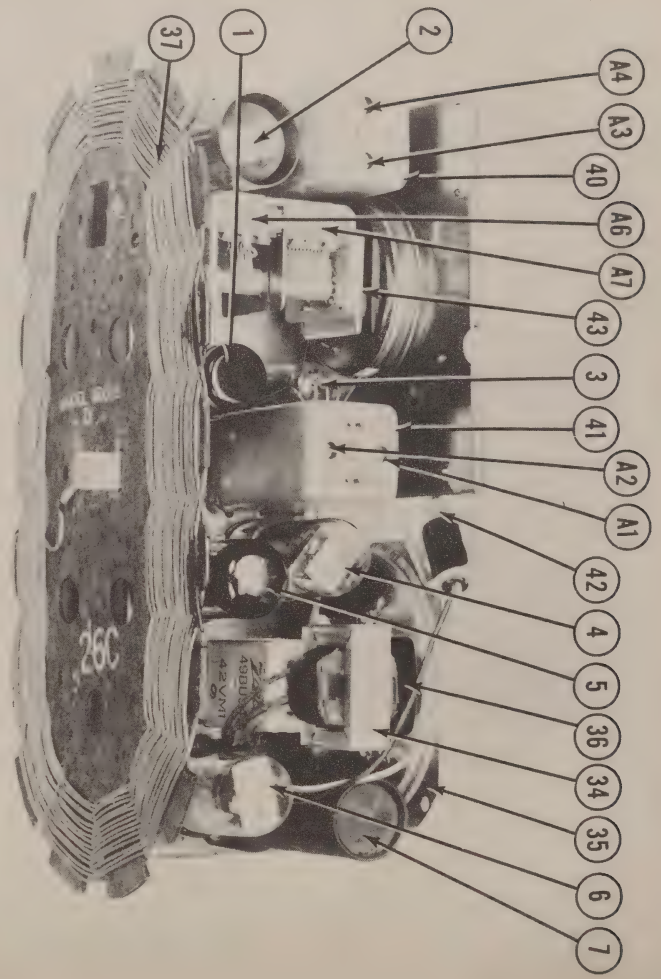
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	500KΩ	1	63-1337				Volume Control & SW
B	Shaft		Not Req.				
C	Switch		" "				

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
20	10KΩ	½	63-589	BTS-10K	Br.-Blk.-Or. RF Plate Load
21	22KΩ	½	63-591	BTS-22K	Red-Red-Or. Converter Grid
22	220Ω	½	63-579	BW-½-220	Red-Red-Br. Parasitic Suppressor
23	10KΩ	½	63-589	BTS-10K	Br.-Blk.-Or. Osc. Grid
24	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
25	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	10KΩ	½	63-641	BTS-10K	Br.-Blk.-Or. Tone Compensation
27	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid Load
28	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
29	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Output Grid
30	150Ω	½	63-686	BW-½-150	Br.-Grn.-Br. Output Cathode
31	470Ω	1	63-1449	BTA-470	Yl.-Vi.-Br. Filter
32	470Ω	1	63-1449	BTA-470	Yl.-Vi.-Br. Filter
33	22Ω	1	63-1450	BW-1-22	Red-Red-Blk. Surge Limiter

Note - Some models use a 120Ω resistor in the output screen lead as shown in the schematic.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
34	1700Ω	3.2Ω	150Ω	.47Ω	Part of 49-547				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
35	PM	3.2Ω	49-547	ST-113		
	CONE DIA.	VC DIA.				
36	4"	⅛"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

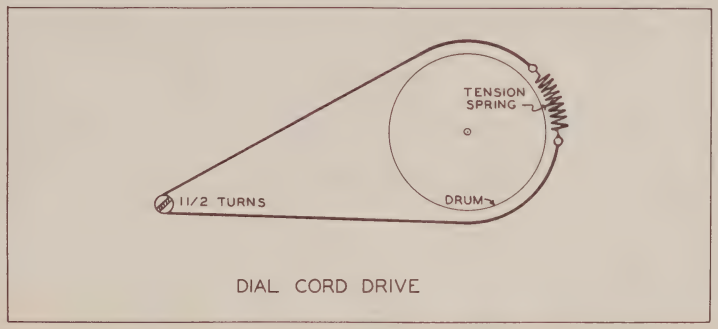
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
37	Loop Ant.	0Ω	1Ω	S11099		Used on Chassis 6C05
37A	" "	0Ω	1Ω	S12466		" " " 6C05Z
38	Osc. Coil	.8Ω	9.5Ω	S11136	14-1040	" " " 6C05
38A	" "	.7Ω	9Ω	S12491	14-1040	" " " 6C05Z
39	Wave Trap	44Ω		S8326		
40	Input IF	24Ω	16Ω	95-929	16-6656	
41	Output IF	17Ω	18.5Ω	95-930	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ZENITH PART No.		
42	bayonet	6-8V	.15	brown	100-87		Type 47

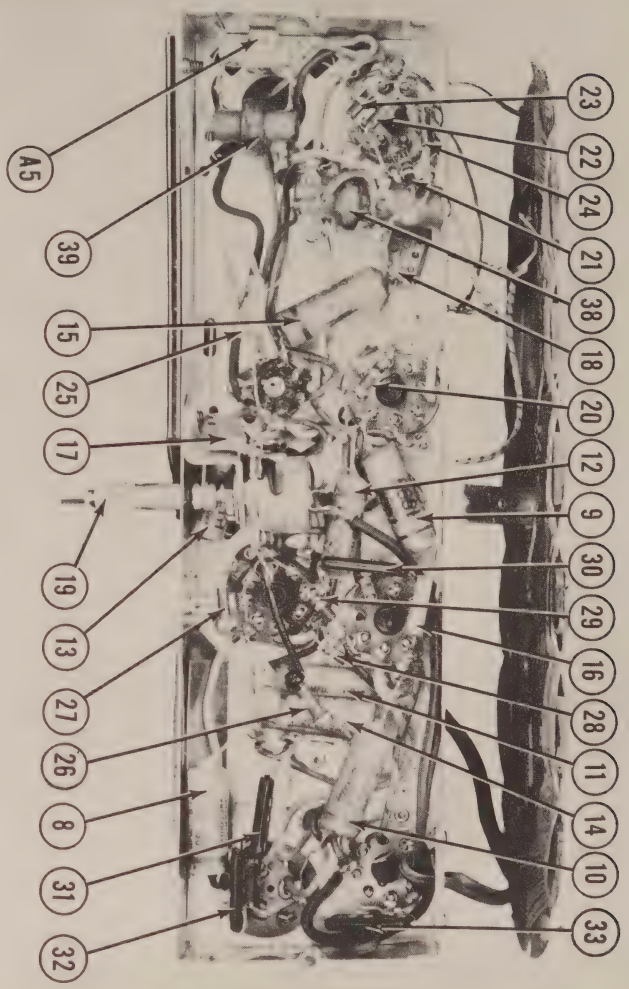
MISCELLANEOUS

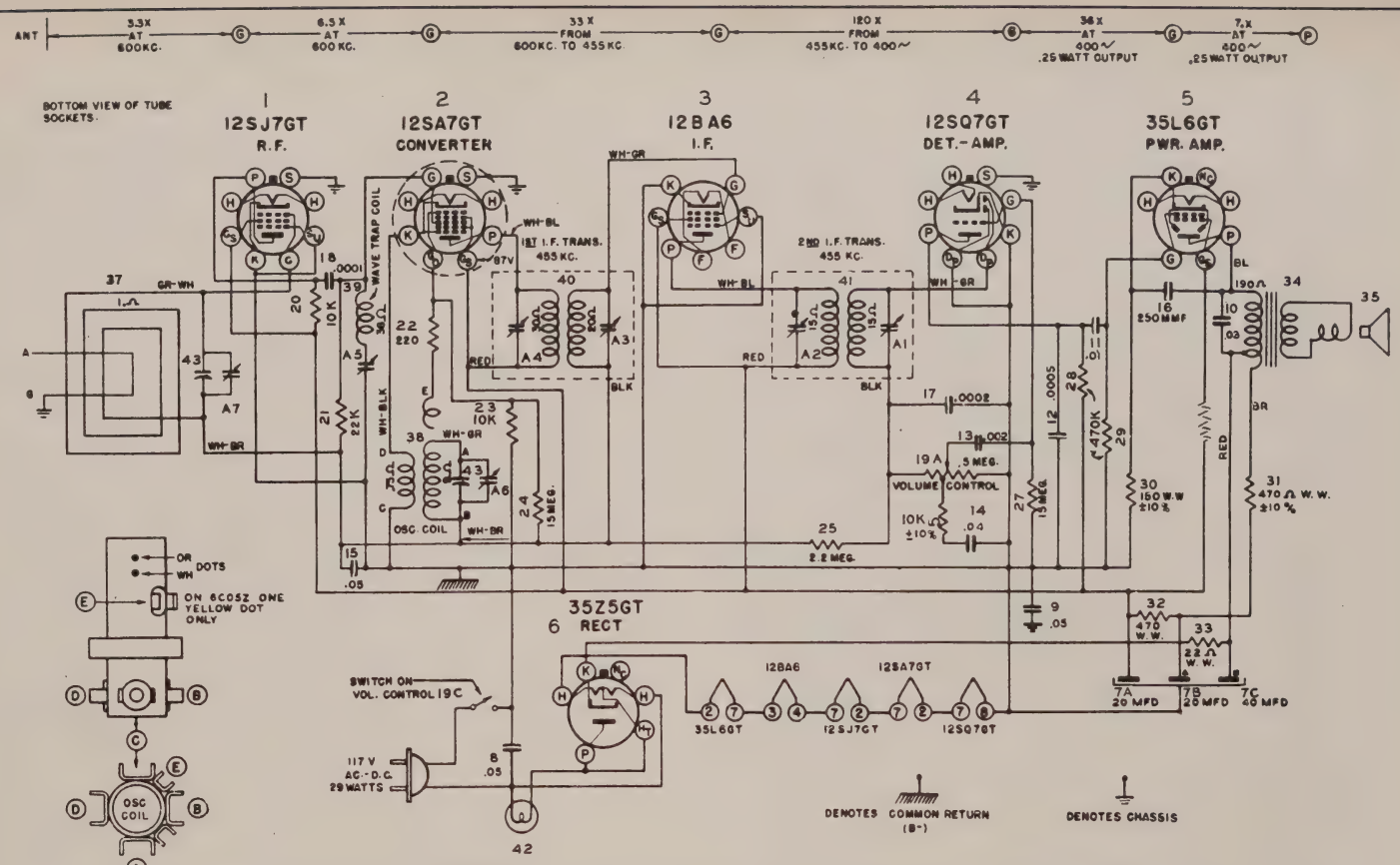
ITEM No.	PART NAME	ZENITH PART No.	NOTES
43A	Tuning Cap.	22-1419	2 Gang Var. Cap. Ch. 6C05
B	" "	22-1521	" " " " Ch. 6C05Z
A5	Trimmer	22-1015	Wave Trap Adjustment
	Dial Scale	26-346	Ch. 6C05
	" "	26-365	Ch. 6C05Z



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SJ7	0 V.	2.5V.AC	0 V.	-.65V.DC	0V.	85V.DC	37V.AC	4.5V.DC
2	12SA7GT	0 V.	13V.AC	85V.DC	85V.DC	-.35V.DC	0 V.	25V.AC	-5V.DC
3	12BA6	-65V.DC	0 V.	50V.AC	37V.AC	85V.DC	85V.DC	0V.	
4	12SQ7GT	0 V.	-6V. DC	0 V.	- 37VDC	0 V.	57V.DC	13V.AC	0 V.
5	35L6GT	0 V.	85V.AC	110V. DC	85V.DC	0 V.	0 V.	50V.AC	4.9V.DC
6	35Z5GT	0 V.	117V.AC	112V.AC	0 V.	112V.AC	0 V.	85VAC	115V.DC

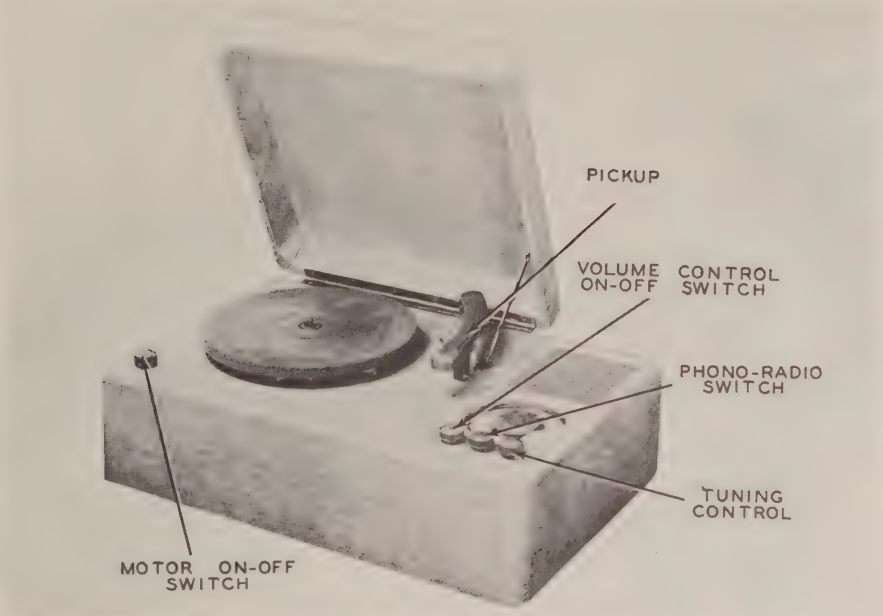
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SJ7	INF	26 Ω	0 Ω	2.2MEG	0 Ω	90K Ω	48 Ω	100K Ω
2	12SA7GT	INF	13 Ω	90K Ω	90K Ω	9.5K Ω	.5 Ω	26 Ω	2.2MEG
3	12BA6	2.2MEG	0 Ω	48 Ω	36 Ω	90KΩ	90KΩ	0 Ω	
4	12SQ7GT	INF	10MEG	0 Ω	460K Ω	0 Ω	550K Ω	13 Ω	0 Ω
5	35L6GT	INF	80 Ω	90K Ω	90K Ω	440K Ω	INF	48 Ω	140 Ω
6	35Z5GT	INF	110 Ω	105 Ω	INF	105 Ω	INF	80 Ω	90K Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

OLYMPIC
MODEL 6-504, 6-504L



OLYMPIC
MODEL 6-504, 6-504L

OLYMPIC MODELS 6-504L

TRADE NAME	Olympic Models 6-504, 6-504L
MANUFACTURER	Olympic Radio & Television Div. of Hamilton Radio Corp. 510 Avenue of the Americas, New York 11, N.Y.
TYPE SET	AC Combination Record Player - Superheterodyne Radio Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC Rating .250 Amps. @ 117V AC
TUNING RANGE—BROADCAST	535-1700KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not connect .1 MFD in series with low side to B- and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
50 MMFD	High side to ant. terminal on loop. Low side to B-.	1700KC	1700KC (170 on dial)	"	A5	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	1400KC	Tune in 1400KC signal.	"	A6	"
						Repeat adjustments A5 and A6.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		OLYMPIC PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8K	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	OLYMPIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	40	150	CO-107	2N511	M-2x40-150	TA-440	PRS150-40-40	BRD4415	Filter - Blue
B	40	150							" - Red
7	.05	400	RCP10W4503A	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	50L6 Plate Bypass
9	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
10	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	" "
11	.02	200	RCP10W2203A	TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Filter
12	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-.01	DT6S1	Ant. Coupling
13	330	500	RCM20A331M	MC241	M0.5-33	1FM-33S	1468-.00035	5W5T3	Audio Plate Bypass
14	220	500	RCM20A221M	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Grid Bypass
15	100	500	RCM20A101M	MC236	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
16	330	500	RCM20A331M	MC241	M0.5-33	1FM-33S	1468-.00035	5W5T3	Osc. Grid Cap.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	500KΩ	1	PT102	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

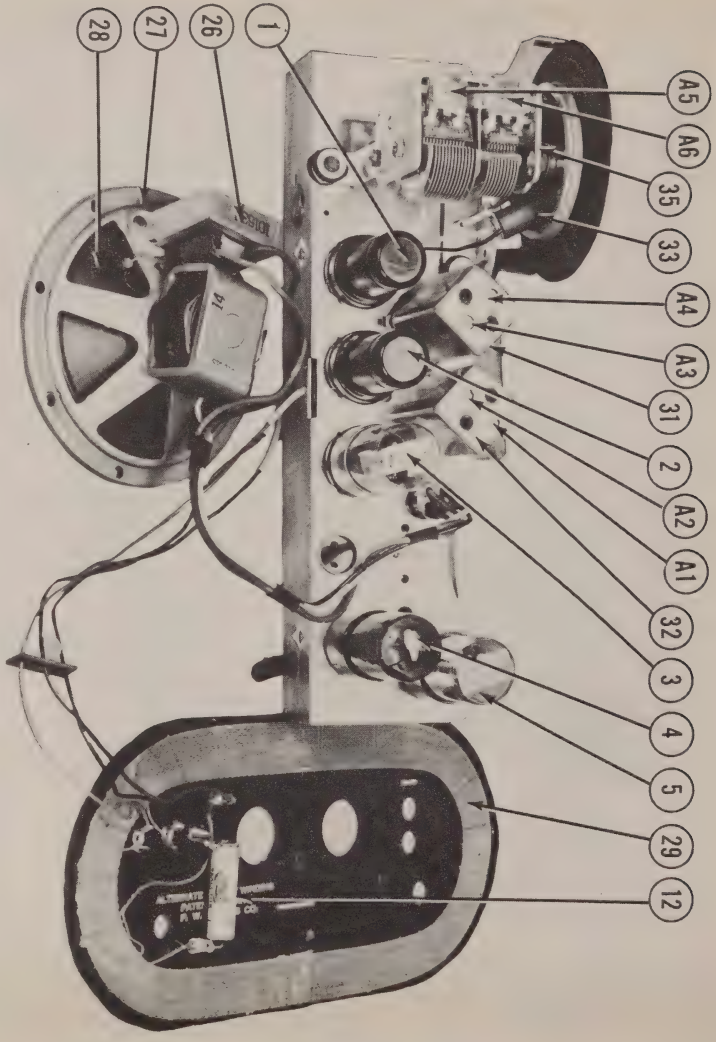
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLYMPIC PART No.	IRC PART No.	
18	8200Ω	½	REB822K	BTS-8200	Gray-Red-Red Osc. Grid
19	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	10 Meg.	½	REB106M	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
21	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
22	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
23	120Ω	½	REB121K	BW-½-120	Br.-Red-Br. Output Cathode
24	1 Meg.	½		BTS-1 Meg.	Br.-blk.-Grn. Phono Series - See Note 1
25	220Ω	1	REC221K	BW-1-220	Red-Red-Br. Pilot Light Shunt

Note 1 - Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
26	2000Ω	3Ω	150Ω	.6Ω	Part of SK-310	A-3676	T-14582		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLYMPIC PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
27	425Ω	3Ω	SK-510	ST-450		
	CONE DIA.	VC DIA.				
28	4-9/16"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	OLYMPIC PART No.	MEISSNER PART No.	
29	Loop Ant.	.2Ω	1.5Ω	LP355		
30	Osc. Coil		7Ω	CL159	14-1040	
31	Input IF	11.5Ω	11.5Ω	TR186	16-6666	
32	Output IF	11.5Ω	14Ω	TR186	16-6667	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					OLYMPIC PART No.		
33	Bayonet	6-8	0.15	Brown	BU-187		Type #7

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
34	Switch	SW-243	Phono-Radio
35	Tuning Cap.	CV-501	2 Gang Variable Cap.
36	Switch	SW-330	Motor On-Off SPST
	Crystal	CR-170	Dial
	Pointer	PO-259	"
	Knob	KN-331	Walnut Motor Off-On
	"	KN-339	" Tuning
	"	KN-340	" Off-On
	"	KN-341	" Radio-Phono

DISASSEMBLY INSTRUCTIONS

1 - Remove volume-on-off switch, radio-phono, and tuning control push-on type knobs.

2 - Remove 10 Phillips head screws from bottom cover. Remove cover.

3 - Remove antenna loop from cabinet by removing bolt and nut from antenna loop.

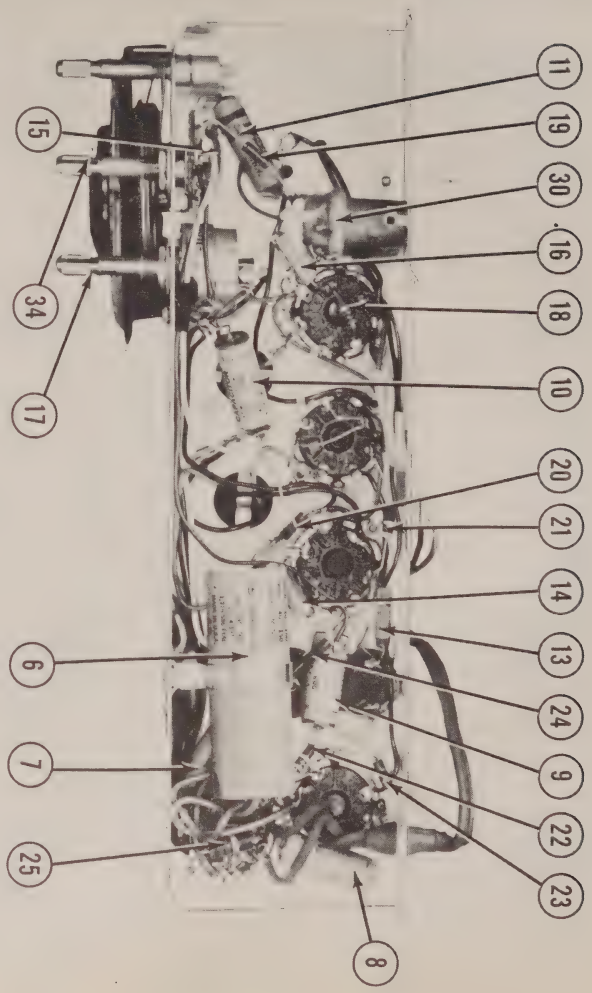
4 - Remove antenna loop cable bracket from cabinet.

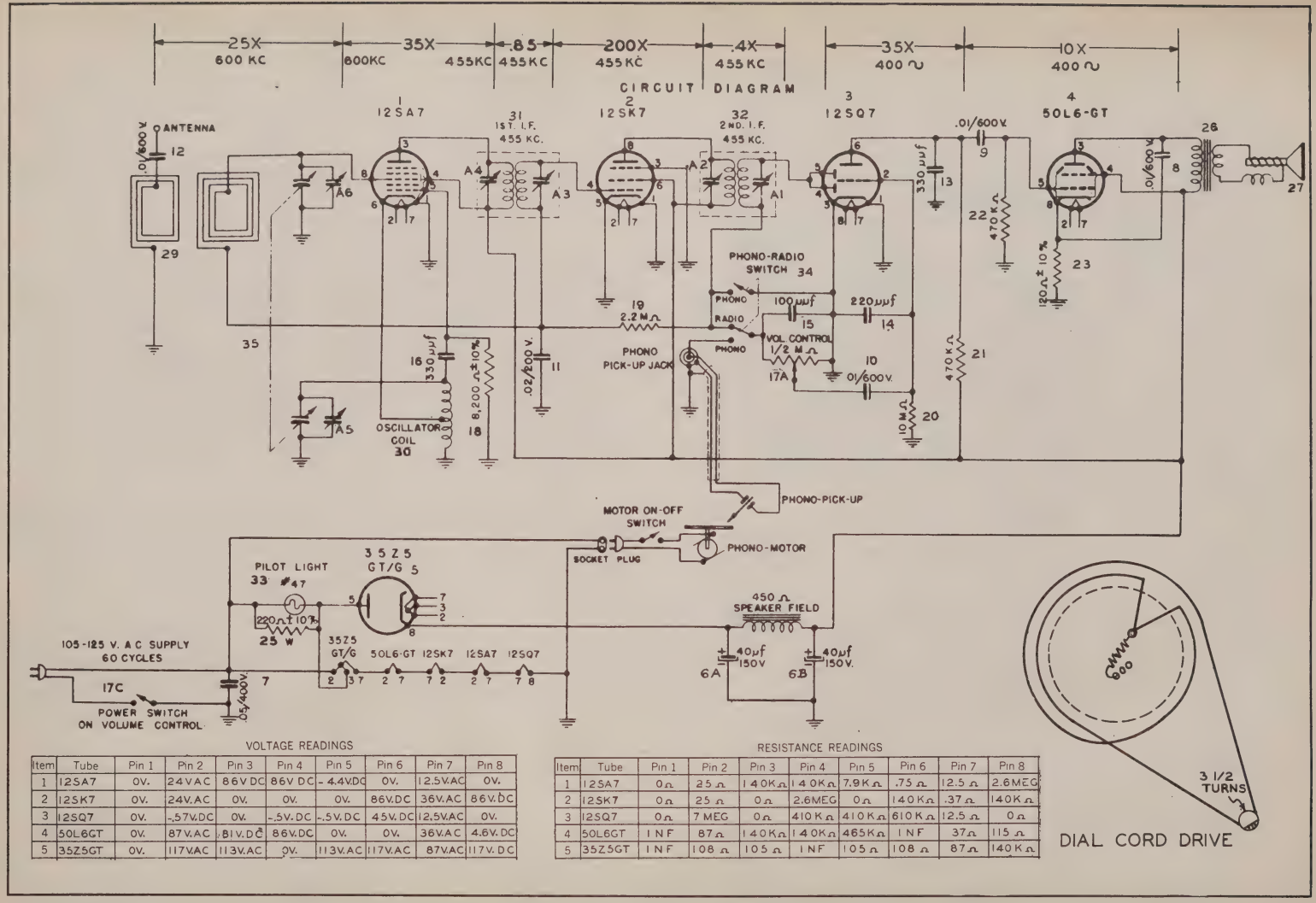
5 - Disconnect phono-motor plug, phono pick-up jack, and speaker plug from chassis.

6 - Remove two hex screws holding chassis to cabinet. Remove chassis.

7 - Remove speaker (mounted on cabinet by 4 nuts and washers).

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	24V AC	86V DC	86V DC	- 4.4VDC	0V.	12.5V.AC	0V.
2	12SK7	0V.	24V.AC	0V.	0V.	0V.	86V.DC	36V.AC	86V.DC
3	12SQ7	0V.	-.57V.DC	0V.	-.5V.DC	-.5V.DC	45V.DC	12.5V.AC	0V.
4	50L6GT	0V.	87V.AC	81V.DC	86V.DC	0V.	0V.	36V.AC	4.6V.DC
5	35Z5GT	0V.	117V.AC	113V.AC	0V.	113V.AC	117V.AC	87V.AC	117V.DC

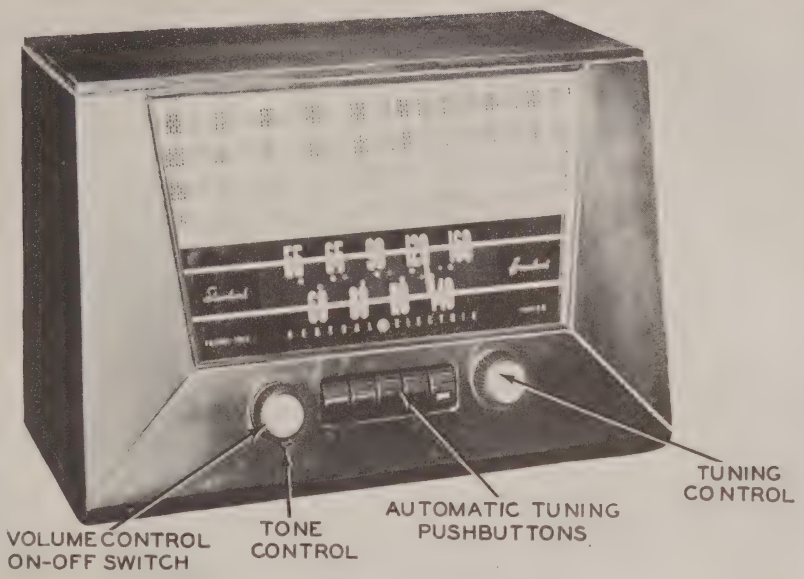
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0Ω	25Ω	140KΩ	140KΩ	7.9KΩ	.75Ω	12.5Ω	2.6MEG
2	12SK7	0Ω	25Ω	0Ω	2.6MEG	0Ω	140KΩ	.37Ω	140KΩ
3	12SQ7	0Ω	7 MEG	0Ω	410KΩ	410KΩ	610KΩ	12.5Ω	0Ω
4	50L6GT	INF	87Ω	140KΩ	140KΩ	465KΩ	INF	37Ω	115Ω
5	35Z5GT	INF	108Ω	105Ω	INF	105Ω	108Ω	87Ω	140KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

GENERAL ELECTRIC
MODEL 321



GENERAL ELECTRIC
MODEL 321

GENERAL ELECTRIC 321

TRADE NAME	General Electric Model 321
MANUFACTURER	General Electric Co., Electronics Dept., Bridgeport, Conn.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES(SIX)	Types, 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SC7 Det.-AVC-AF, 35L6GT Power Output , 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC RATING - .340 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #4 (grid) 12SK7 IF Amp. Low side to B-.	455KC	1500KC	Across voice coil.	A1,A2.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with low side to B- and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	High side to pin #8 (grid) 12SA7. Low side to B-.	"	"	"	A3,A4.	"
50 MMFD	High side to ant. post. Low side to B-.	"	"	"	A5*	Adjust for minimum output. Use isolation transformer or isolating capacitor.
"	"	1500KC	"	"	A6	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	"	"	"	A7	"

With set bolted in cabinet turn dial until pointer is as far left as it will go. Pointer should be at first marking at left of scale. If not adjust pointer under reference mark. Set dial at 1500KC mark and remove chassis being careful not to disturb setting. Disconnect wavetrap (A9 and A5) from circuit while aligning IF's, then reconnect. After adjusting A6 replace set in cabinet for A7 adjustment. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.
*Not used in all models.

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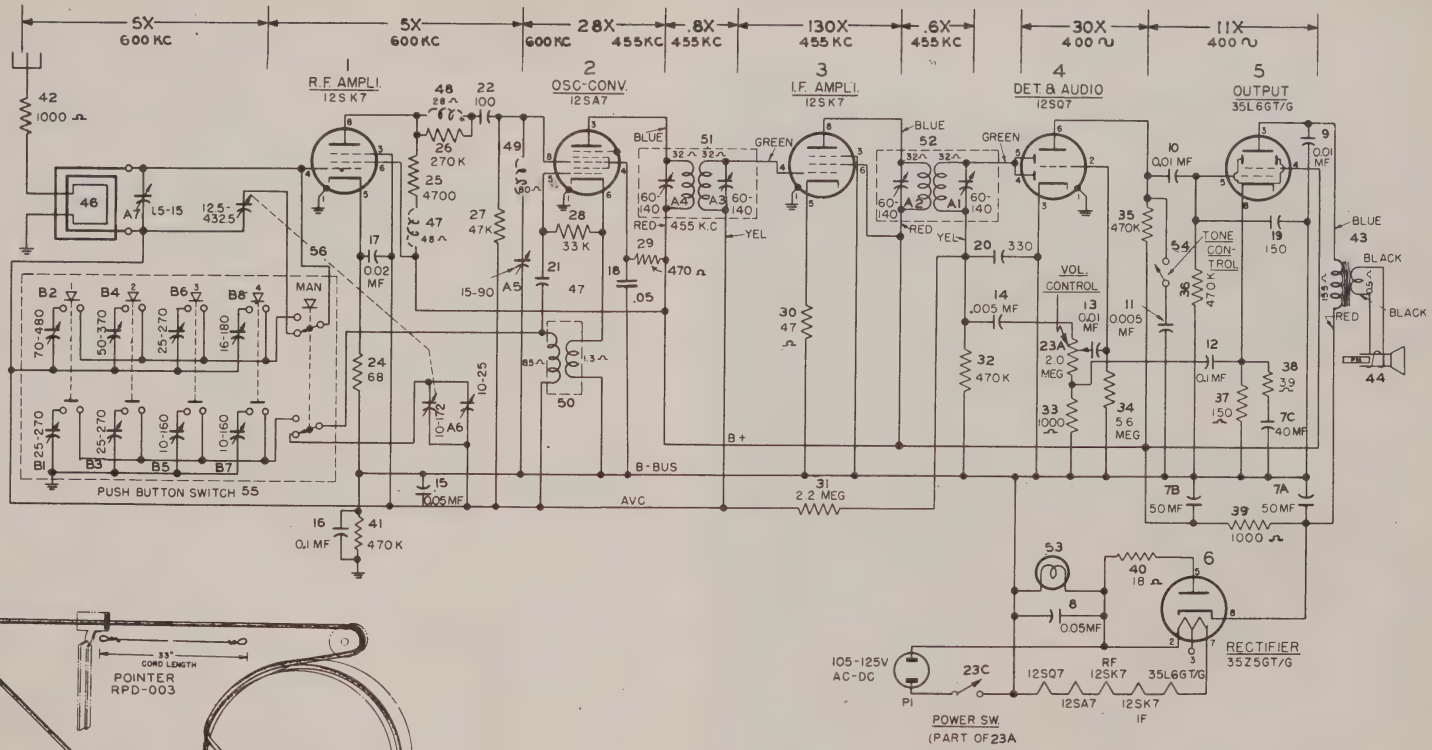

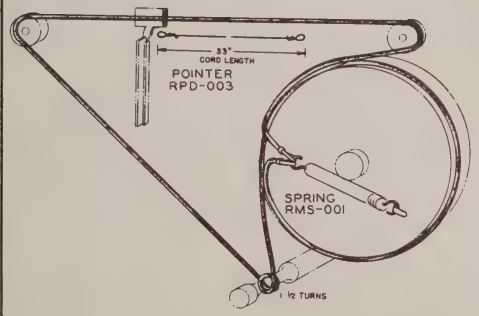

VOLTAGE & RESISTANCE READINGS TAKEN IN "MANUAL" POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	-.1V. DC	24.2VAC	-.3V. DC	-.3V. DC	-.55V. DC	92V. DC	36V.AC	57V. DC
2	12SA7	-.1V. DC	12V. AC	92V. DC	88V. DC	-1.2V. DC	0V.	24.2VAC	-.42V. DC
3	12SK7	-.1V. DC	36V. AC	0V.	-.3V. DC	.75V. DC	92V. DC	48.6VAC	92V. DC
4	12SQ7	-.1V. DC	-.42V. DC	0V.	-.17V. DC	-.17V. DC	45V. DC	12V. AC	0V.
5	35L6GT	0V.	83V. AC	121V. DC	92V. DC	0V.	0V.	48.6VAC	5.6V. DC
6	35Z5GT	0V.	117V. AC	0V.	117V. AC	116V. AC	0V.	83V. AC	12.5V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	450 KΩ	21.5 Ω	2.6MEG	2.6MEG	59 Ω	75K Ω	31 Ω	80K Ω
2	12SA7	450K Ω	11.5 Ω	75K Ω	75K Ω	32K Ω	.75 Ω	21.5 Ω	2.6MEG
3	12SK7	450K Ω	31 Ω	0 Ω	2.6MEG	50 Ω	75K Ω	39 Ω	75K Ω
4	12SQ7	450 KΩ	6 MEG	0 Ω	400K Ω	400K Ω	540K Ω	11.5 Ω	0 Ω
5	35L6GT	INF	56 Ω	75K Ω	75 K Ω	460K Ω	0 Ω	39 Ω	142 Ω
6	35Z5GT	INF	62 Ω	INF	62 Ω	85 Ω	0 Ω	56 Ω	75K Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AMC
MODEL 125-P

AMC
MODEL 125-P

AMC MODEL 125-P

TRADE NAME	AMC Model 125-P
MANUFACTURER	Associated Merchants Corp., 1440 Broadway, New York 18, N.Y.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .240 Amps. @ 117 V AC
TUNING RANGE—BROADCAST	545-1320KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to lug on A5. Low side to chassis.	455KC	High freq. end of dial. Cores out of coils.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with ground lead and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1320KC	"	"	A5	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.
	"	1500KC	Tune in 1500 KC signal.	"	A6	"
	"	600KC	Tune in 600KC signal.	"	A7	Adjust for maximum output. Rock dial slightly. Recheck adjustments A5 and A6 as given

Volume control at maximum volume and output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AMC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AMC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	5.400-8	FP357	DY-3x40-150	EL-340	AF888D	UP6CJ44	■ Filter
B	40	150							▲ "
C	20	150							"
7	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
9	.01	200		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
10	.01	200		TP421	S-4-01	TC-11	484-.01	DT4S1	" "
11	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	IF Cath. Bypass
12	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
13	.001	600		TP404	S-6-001	TC-21	684-.001	DT6D1	Ant. Coupling
14	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
15	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
16	50	500		MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AMC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	1		MK402	D13-137	AM-63-Z	Volume Control - See Note 1
B	Shaft			Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch			M26	41	SW-A	" " " " "

Note 1 - Install a 50KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (control viewed from shaft side terminals down.)

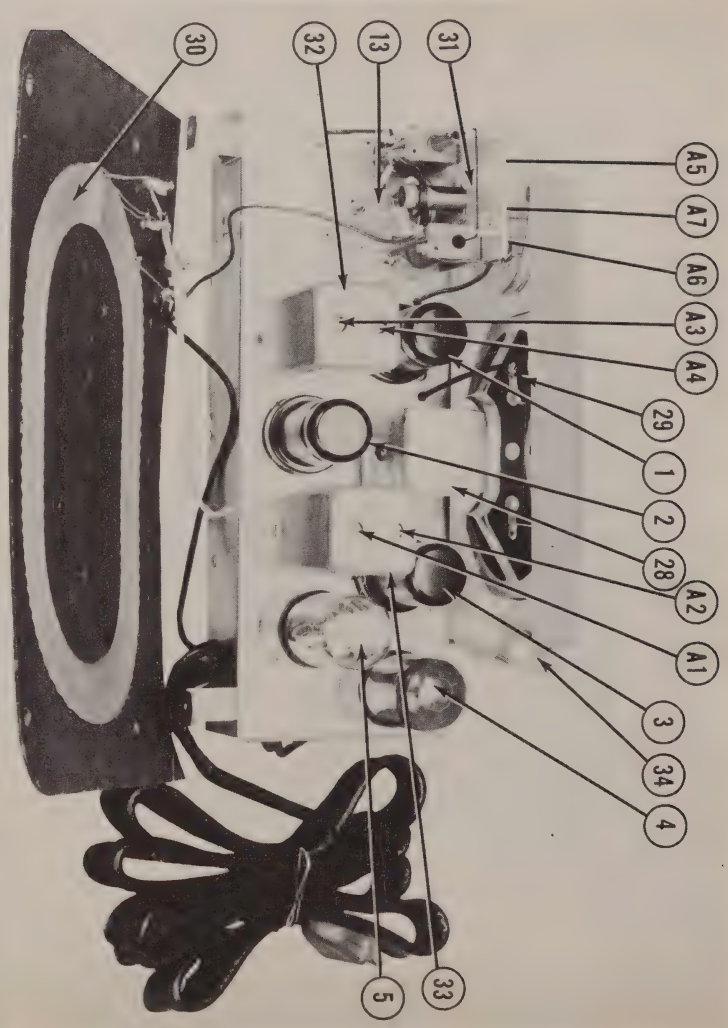
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AMC PART No.	IRC PART No.	IDENTIFICATION CODES
18	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
19	150Ω	½		BW-½-150	Br.-Grn.-Br. IF Cathode
20	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
21	4.7 Meg.	½		BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
23	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
24	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
25	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
26	100Ω	½		BW-½-100	Br.-Blk.-Br. Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AMC PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
27	2000Ω	3.2Ω	186Ω	.65Ω	9.200	A-3376	T-14S82		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

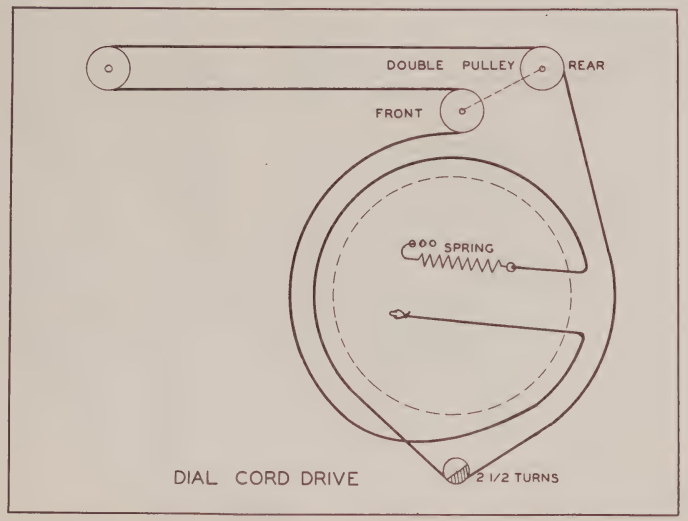
ITEM No.	RATINGS		REPLACEMENT DATA AMC PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
28	FIELD	VC IMP.	30.300	ST-107		
	PM	3.2Ω				
	CONE DIA.	VC DIA.				
29	4½"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

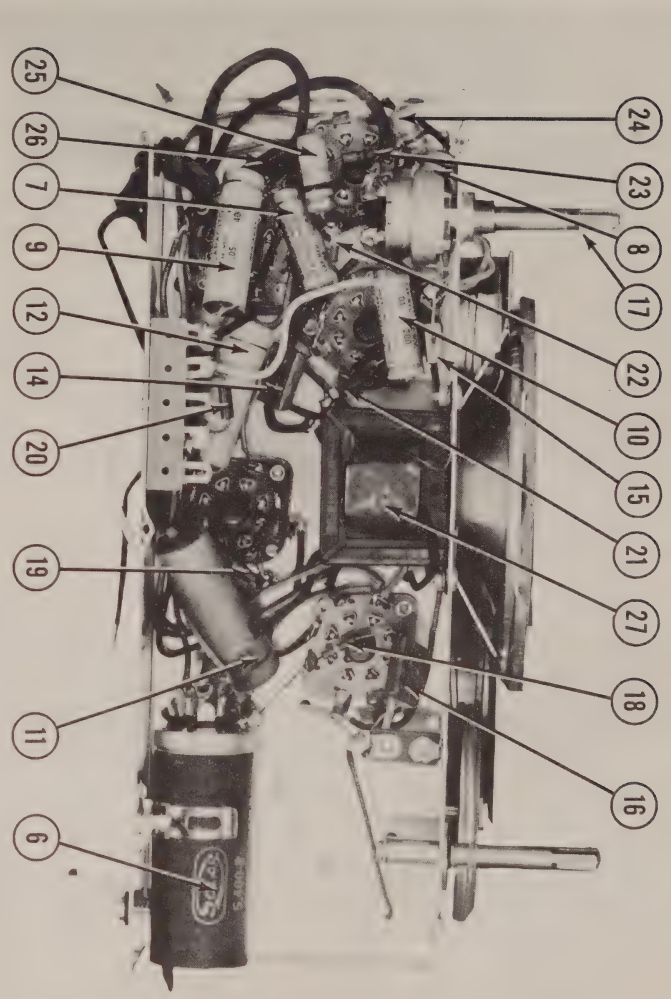
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AMC PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
30	Loop Ant.	3.5Ω		1.426		
31A	Ant. Tuner	11Ω		36.103		31A, 31B, 31C in one assembly. 31A,31B ganged
31B	Osc. Tuner	4.5Ω				
31C	Osc. Padder	4.5Ω				
32	Input IF	43Ω	42Ω	1.259	16-6658	
33	Output IF	42Ω	42Ω	1.409	16-6660	

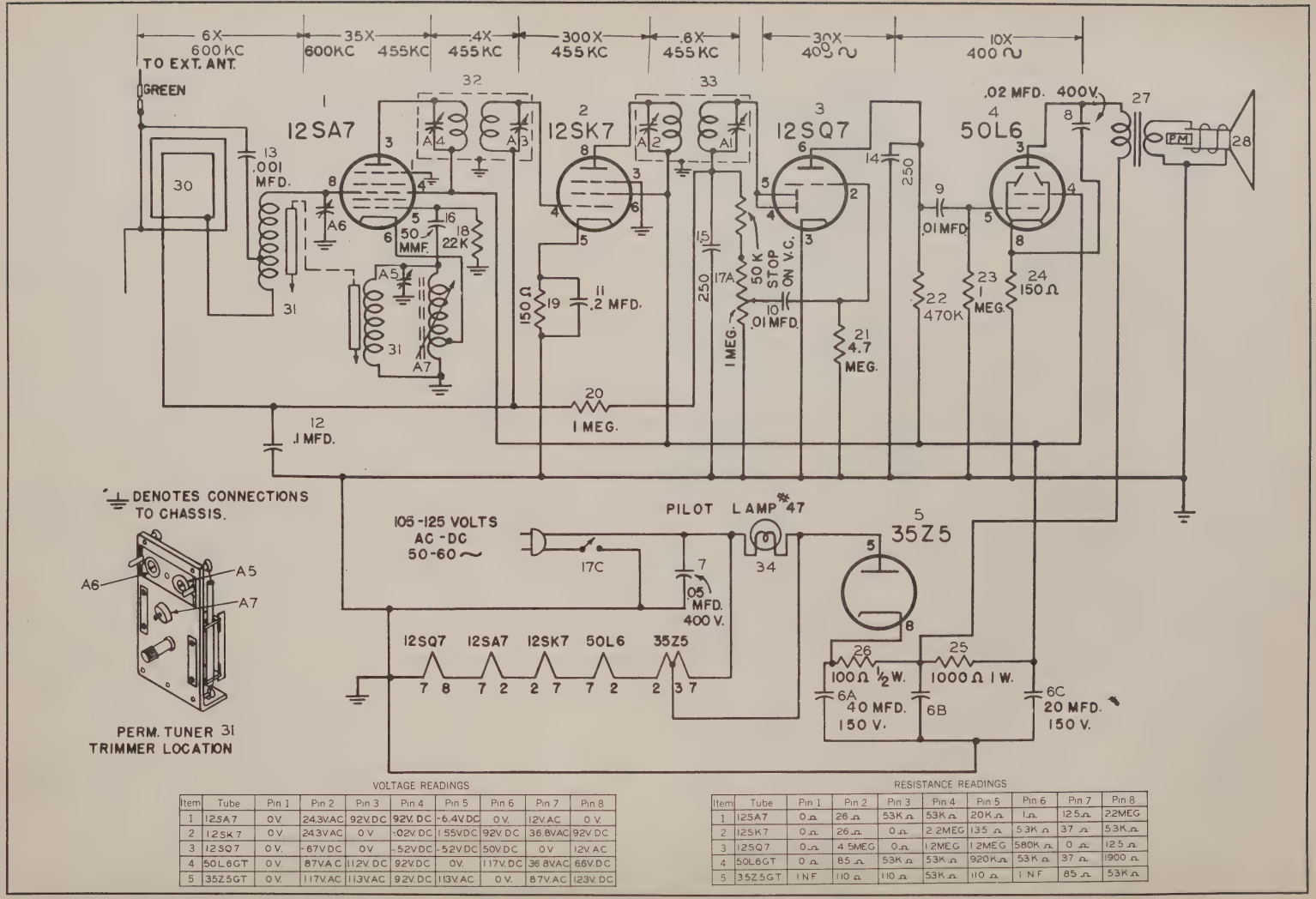
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AMC PART No.	REPLACEMENT DATA	INSTALLATION NOTES
34	Bayonet	6-8	0.15	Brown			Type 47



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0 V.	24.3 V AC	92 V DC	92 V. DC	-6.4 V DC	0 V.	12 V AC	0 V.
2	12SK7	0 V.	24.3 V AC	0 V.	-0.2 V DC	1.55 V DC	92 V. DC	36.8 V AC	92 V DC
3	12SQ7	0 V.	-6.7 V DC	0 V.	-5.2 V DC	-5.2 V DC	50 V. DC	0 V.	12 V. AC
4	50L6GT	0 V.	8.7 V A.C	112 V. DC	92 V. DC	0 V.	117 V. DC	36.8 V AC	6.6 V. DC
5	35Z5GT	0 V.	117 V. AC	113 V AC	92 V. DC	113 V. AC	0 V.	8.7 V. AC	123 V. DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0 Ω	26 Ω	53K Ω	53K Ω	20K Ω	1 Ω	125 Ω	2.2 MEG
2	12SK7	0 Ω	26 Ω	0 Ω	2.2 MEG	135 Ω	53K Ω	37 Ω	53K Ω
3	12SQ7	0 Ω	4.5 MEG	0 Ω	1.2 MEG	1.2 MEG	580K Ω	0 Ω	125 Ω
4	50L6GT	0 Ω	85 Ω	53K Ω	53K Ω	920K Ω	53K Ω	37 Ω	1900 Ω
5	35Z5GT	1 NF	110 Ω	110 Ω	53K Ω	110 Ω	1 NF	85 Ω	53K Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MAGIC-TONE
MODEL 501

MAGIC-TONE
MODEL 501

MAGIC-TONE MODEL 501

TRADE NAME	Magic-Tone Model 501
MANUFACTURER	Radio Development & Research Corp., 233 West 54th Street, New York, N.Y.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC Rating .160 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1630KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) 12SA7. Low side to chassis.	455KC	Point of no interfering signal.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with low side to chassis and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1600KC	1600KC	"	A5	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.
	"	1400KC	Tune in 1400 KC signal.	"	A6	"

Volume control at maximum volume and output of signal generator no higher than is necessary to to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MAGIC-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGIC-TONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150		TC48	S-40-150	UT-401	PRS150-40	BR4015	Filter - Red
B	8	150		TC42	M-8-150	UT-81	PRS150-8	BR815	" - Yellow
7	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
8	.02	600		TP412	S-3-02	TC-12	684-.02	DT6S2	50L6 Plate Bypass
9	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
10	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	" "
11	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
12	.01	600		TP410	S-6-01	TC-11	684-.01	DT6S1	Ant. Coupling
13	250	500		MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
14	250	500		MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
15	100	500		MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cap.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGIC-TONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	1 Meg.	1		MR53	D13-137	M-63-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 16A per instructions.
C	Switch			M26	41	SW-A	" " " " "

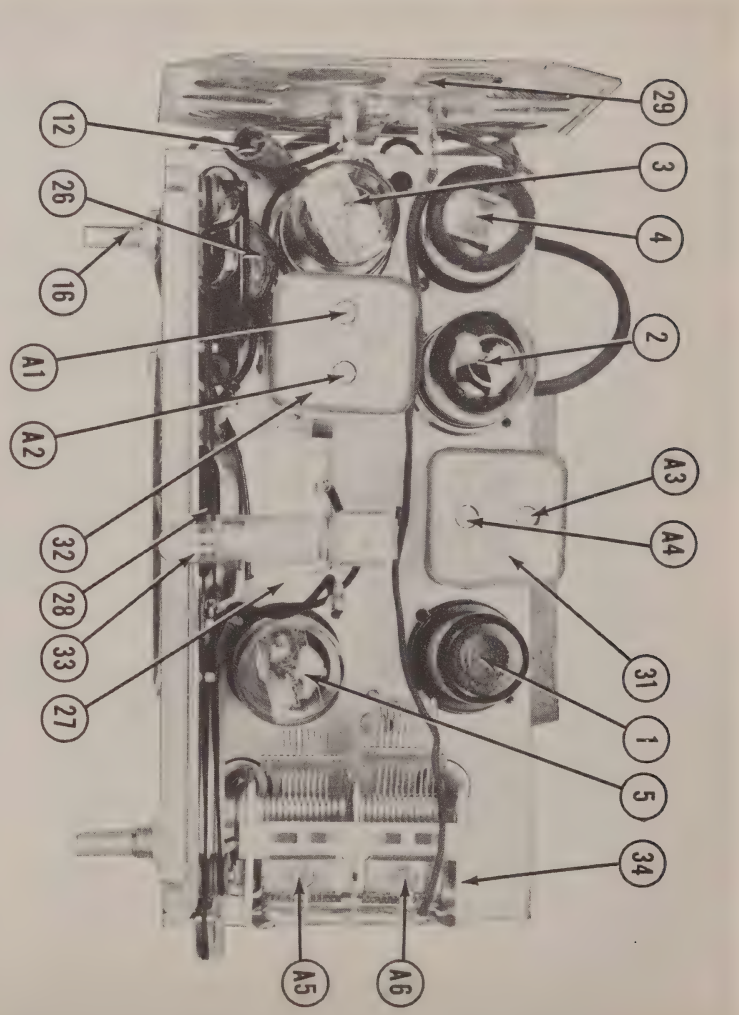
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGIC-TONE PART No.	IRC PART No.	IDENTIFICATION CODES
17	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-blue AVC Network
18	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
19	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
20	1 Meg.	2		BTS-1 Meg.	Br.-Blk.-Grn. Volume Control Shunt
21	6.2 Meg.	½		BTS-3.3 Meg.	Blue-Red-Grn. 1st AF Grid
22	500KΩ	2		BTS-470K	Grn.-Blk.-Yl. 1st AF Plate Load
23	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
24	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
25	3000Ω	1		BTA-3300	Or.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAGIC-TONE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
26	1250Ω	3.35Ω	125	.5Ω		A-3865*	T-14Sc2*		*Do not mount on chassis. Bend mounting tabs down, file out slots and mount on unused bracket on speaker.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA MAGIC-TONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
27	PM	3.35Ω		ST-113		
	CONE DIA.	VC DIA.				
28	3-15/16"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

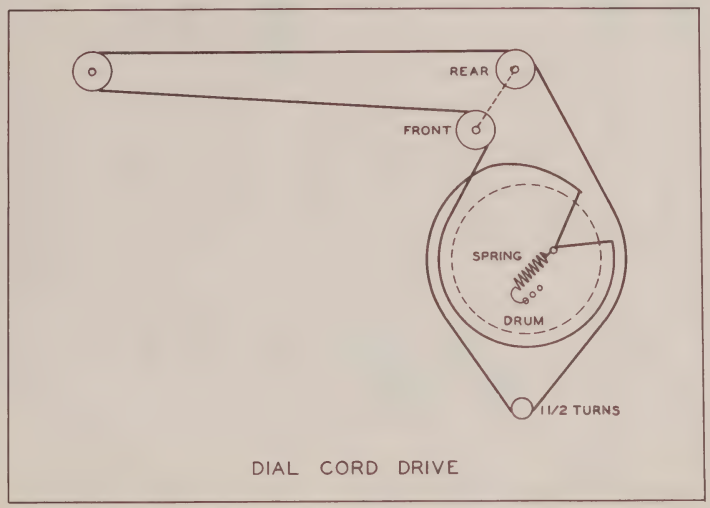
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MAGIC-TONE PART No.	MEISSNER PART No.	INSTALLATION NOTES
29	Loop Ant.	0Ω	1.5Ω			
30	Osc. Coil	.7Ω	4.9Ω		14-1040	
31	Input IF	16Ω	16Ω		16-6658	
32	Output IF	19.5Ω	19.8Ω		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MAGIC-TONE PART No.		INSTALLATION NOTES
33	Bayonet	6-8	0.15	Brown			Type 47

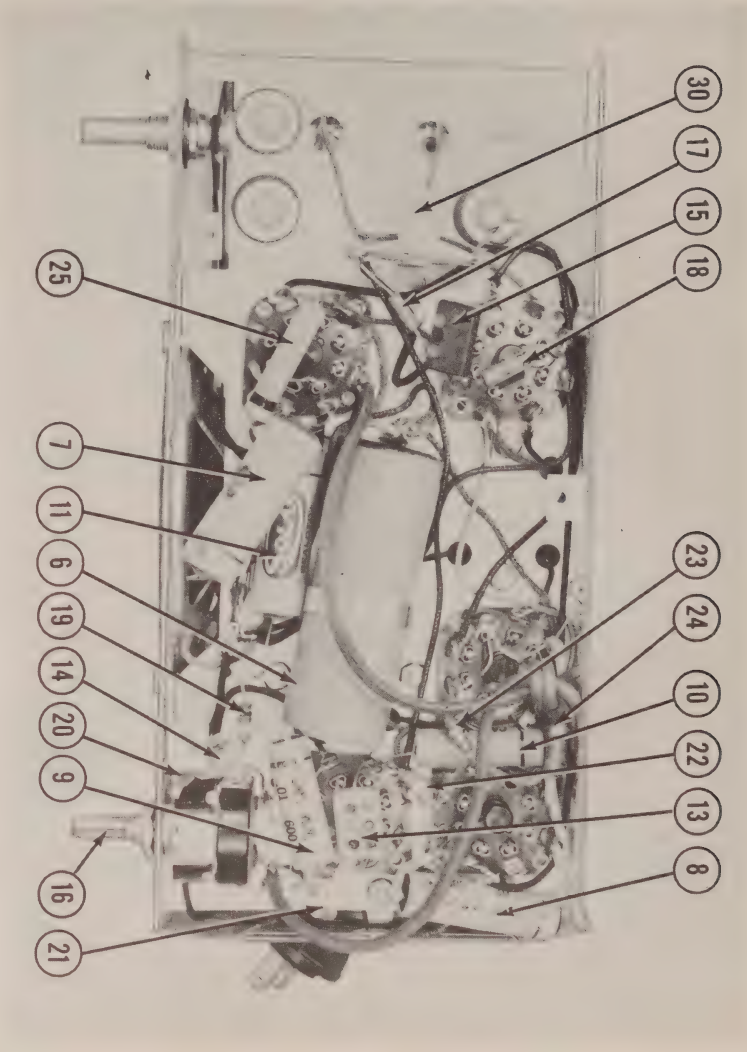
MISCELLANEOUS

ITEM No.	PART NAME	MAGIC-TONE PART No.	NOTES
34	Tuning Cap.		2 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	2nd Audio	12SK7	12SK7	8N	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SONORA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	N-3658	2N511	M-2x40-150	TA-440	PRS150-40-40	BRD4415	Filter - Red
B	40	150							" - Green
8	6	150	N-1367	TC42	M-8-150	UT-81	PRS150-8	BR815	Audio Plate Decoup.
9	.05	400	N-1346	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
10	.05	200	N-1345	TP426	S-4-05	TC-15	484-.05	DT4S5	Feedback
11	.02	400	N-1376	TP423	S-4-02	TC-12	484-.02	DT4S2	35L6 Plate Bypass
12	.1	200	N-1351	TP428	S-4-1	TC-1	484-.1	DT4P1	Tone Compensation
13	.01	400	N-1344	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
14	.02	400	N-1376	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Screen Bypass
15	.003	600	N-2063	TP406	S-6-003	TC-23	684-.003	DT6S3	Audio Coupling
16	.0005	600	N-4890	TP403	S-6-0005	TC-35	1468-.0005	DT6T5	Audio Plate Bypass
17	.005	600	N-4894	TP408	S-6-005	TC-25	684-.005	DT6D5	Audio Coupling
18	.09	200	N-4957	TP428	S-6-1	TC-1	484-.1	DT4P1	Line Isolating
19	.05	200	N-1345	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
20	100	500	N-1374	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode

CONTROLS

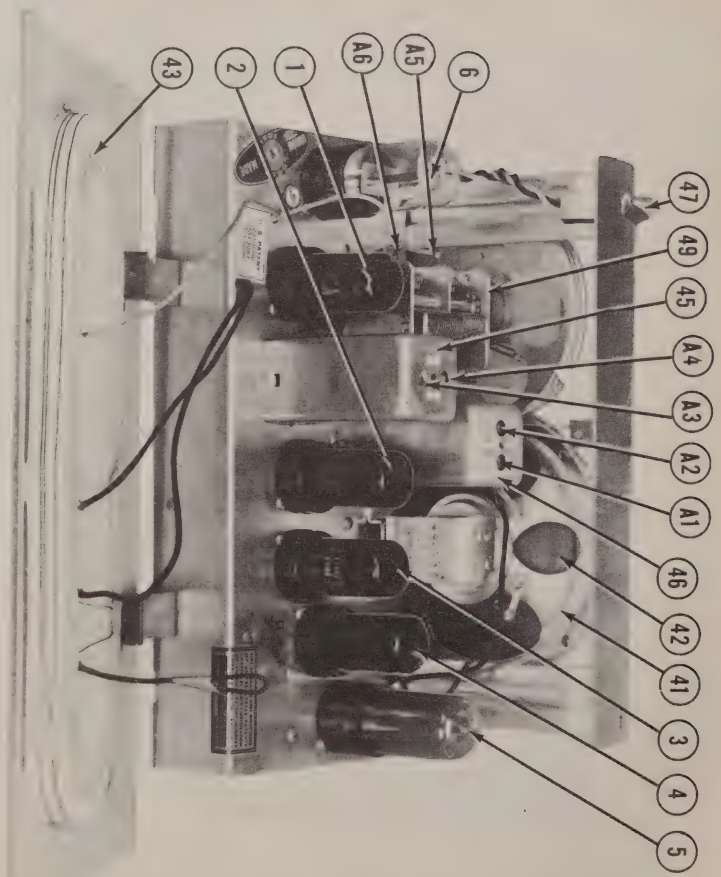
ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	N-4889	MK401	D13-133	AM-60-4	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSE-3	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	IRC PART No.	IDENTIFICATION CODES
22	22KΩ	½	N-4025	BTS-22K	Red-Red-Or. Osc. Grid
23	220KΩ	½	N-4026	BTS-220K	Red-Red-Yl. Line Isolating
24	3.3 Meg.	½	N-4062	BTS-3.3 Meg	Or.-Or.-Grn. AVC Network
25	4.7 Meg.	½	N-4031	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
26	100KΩ	½	N-1778	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
27	10KΩ	½	N-4895	BTS-10K	Br.-Blk.-Or. 1st AF Plate Load
28	4.7 Meg.	½	N-4061	BTS-4.7 Meg	Yl.-Vi.-Grn. 2nd AF Grid
29	2200Ω	½	N-4896	BTS-2200	Red-Red-Red 2nd AF Cathode
30	220KΩ	½	N-4899	BTS-220K	Red-Red-Yl. 2nd AF Plate Load
31	1.2 Meg.	½	N-4470	BTS-1.2 Meg	Br.-Red-Grn. 2nd AF Screen Dropping
32	22KΩ	½	N-5029	BTS-22K	Red-Red-Or. Tone Compensation
33	8200Ω	½	N-4897	BTS-8200	Gray-Red-Red Tone Compensation
34	180Ω	½	N-4067	BW-½-180	Br.-Gray-Br. Output Cathode
35	470KΩ	½	N-4027	BTS-470K	Yl.-Vi.-Yl. Output Grid
36	1200Ω	1	N-4900	BTA-1200	Br.-Red-Red Filter
37	33Ω	1	N-4034	BW-1-33	Or.-Or.-Blk. Surge Limiter
38	33Ω	1	N-4034	BW-1-33	Or.-Or.-Blk. Line Dropping
39	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode-Load See Note 1

Note 1 - Not used in all models

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SONORA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
40	2100Ω	2.6Ω	205Ω Tapped @ 7.5Ω	.55Ω	N-4875				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SONORA PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
41	PM	2.6Ω	N-4868	ST-105		
	CONE DIA.	VC DIA.				
42	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

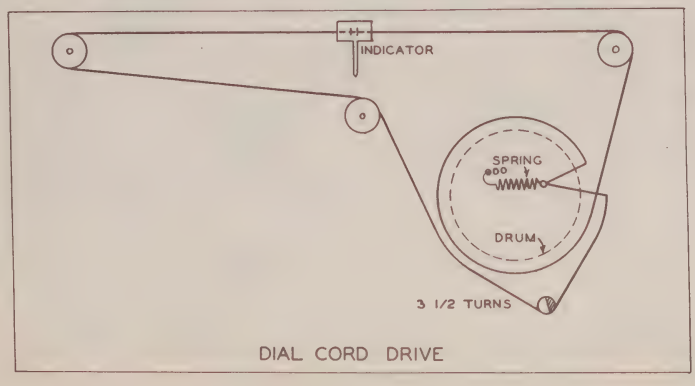
ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	SONORA PART No.	MEISSNER PART No.	
43	Loop Ant.	0Ω	2.3Ω	N-4912		
44	Osc. Coil	.8Ω	6.1	N-4810	*14-1040	*Add 50MMFD cap. from grid 12SA7 to high side tuning cap.
45	Input IF	12.6Ω	14.5Ω	N-4872	16-6658	
46	Output IF	23.9Ω	21Ω	N-4873	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SONORA PART No.		
47	Bayonet	6-8	0.15	Brown			Type 47

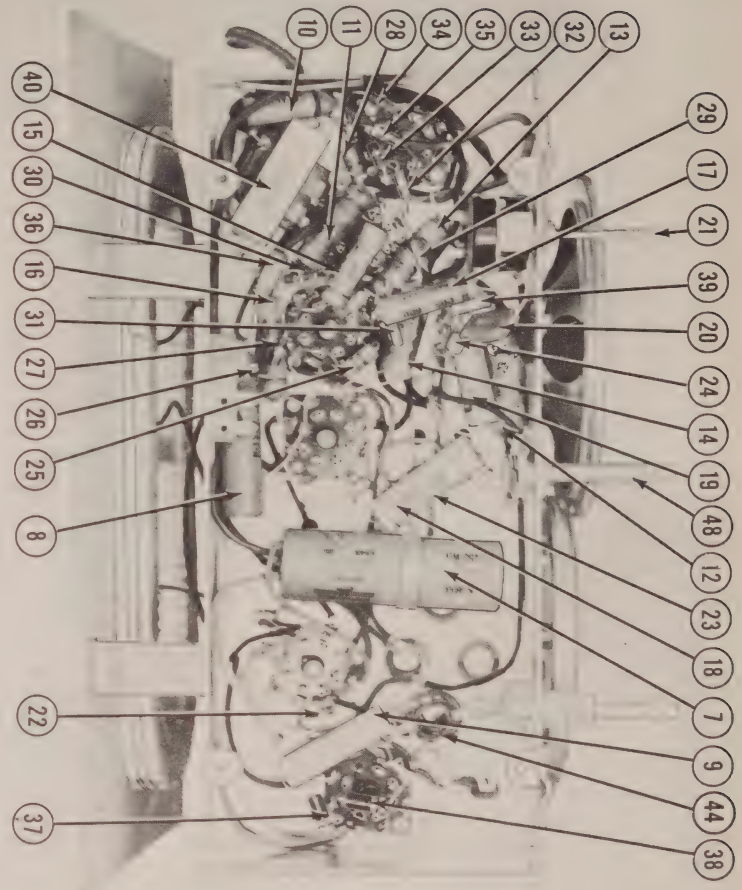
MISCELLANEOUS

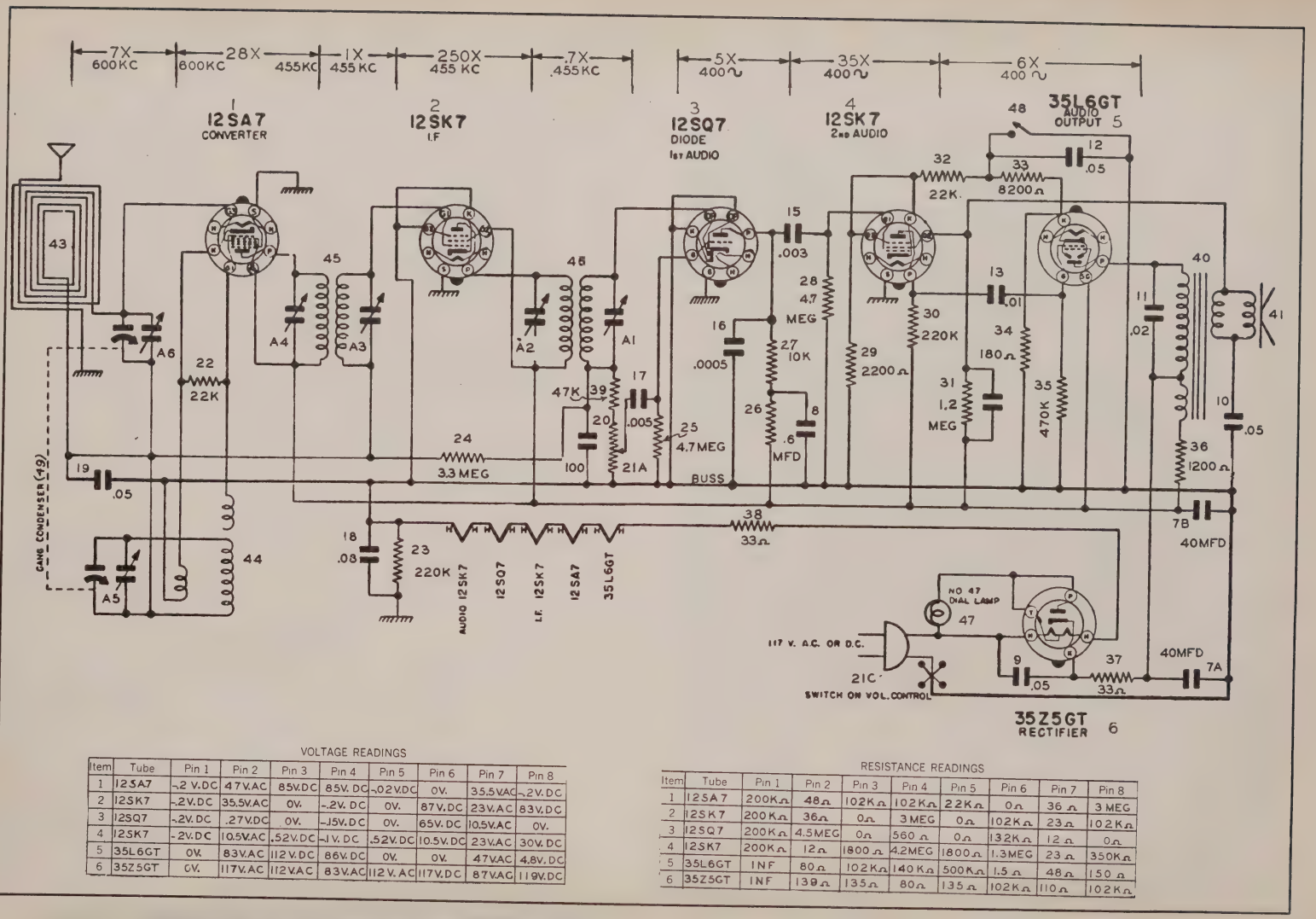
ITEM No.	PART NAME	SONORA PART No.	NOTES
48	Tone Switch	N-4942	
49	Tuning Cap.	N-4907	2 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

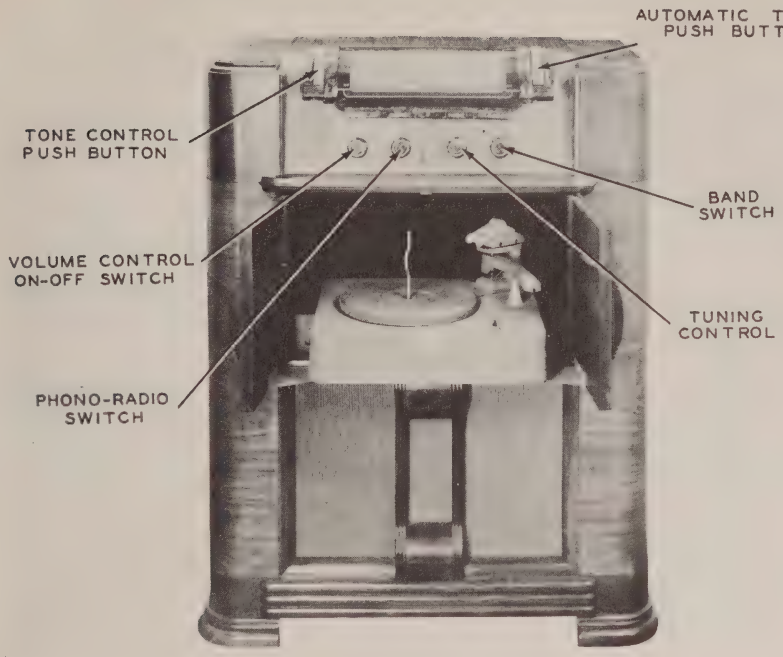
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	-.2 V.DC	47V.AC	85V.DC	85V. DC	-.02V.DC	0V.	35.5VAC	-.2V. DC
2	12SK7	-.2V.DC	35.5V.AC	0V.	-.2V. DC	0V.	87V.DC	23V.AC	83V.DC
3	12SQ7	-.2V. DC	.27V.DC	0V.	-.15V. DC	0V.	65V. DC	10.5V.AC	0V.
4	12SK7	-.2V.DC	10.5V.AC	.52V.DC	-.1V. DC	.52V. DC	10.5V. DC	23V.AC	30V. DC
5	35L6GT	0V.	83V.AC	112V.DC	86V. DC	0V.	0V.	47V.AC	4.8V. DC
6	35Z5GT	0V.	117V.AC	112V.AC	83V.AC	112V. AC	117V.DC	87V.AC	119V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	200KΩ	48Ω	102KΩ	102KΩ	22KΩ	0Ω	36Ω	3 MEG
2	12SK7	200KΩ	36Ω	0Ω	3 MEG	0Ω	102KΩ	23Ω	102KΩ
3	12SQ7	200KΩ	4.5MEG	0Ω	560Ω	0Ω	132KΩ	12Ω	0Ω
4	12SK7	200KΩ	12Ω	1800Ω	4.2MEG	1800Ω	1.3MEG	23Ω	350KΩ
5	35L6GT	INF	80Ω	102KΩ	140KΩ	500KΩ	1.5Ω	48Ω	150Ω
6	35Z5GT	INF	138Ω	135Ω	80Ω	135Ω	102KΩ	110Ω	102KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



ADMIRAL
CHASSIS 10A1

ADMIRAL
CHASSIS 10A1

ADMIRAL CHASSIS 10A1

TRADE NAME	Admiral Chassis 10A1, Model 6C71
MANUFACTURER	Admiral Corp., 3300 West Cortland Street, Chicago, Ill.
TYPE SET	AC Operated Combination Radio & Automatic Phonograph. 4 Band Superheterodyne Radio with Self Contained Loop Antenna & Automatic Tuning.
TUBES (TEN)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 1st IF Amp., 6SK7 2nd IF Amp., 6SQ7 Detector, 6SQ7 1st Audio Amp., 6SQ7 Phase Inverter, 2-6F6 Power Output, 5Y3G Rectifier.
POWER SUPPLY	117 Volts AC Rating .680 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE 5-7.5MC, 8-12.5MC, 14-18MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (grid) of 6SA7. Low side to chassis.	455KC	BC	Pointer to upper limit. (max. right)	Across primary or secondary of output trans.	A1,A2, A3,A4, A5.	Adjust for maximum output.
10 MMFD	High side to white loop lead. Low side to chassis.	1605KC	"	"	"	A6,A7, A8.	" " " "
"	"	1300KC	"	Set to 1300 KC mark on slide rail	"	A9,A10 A11.	" " " "
400Ω res.	"	7.5MC	49 meter	Pointer to upper limit. (max. right)	"	A12, A13.	" " " "
"	"	7.2MC	"	Set to 1300 KC mark on slide rail.	"	A14, A15.	" " " "
"	"	12.5MC	31-25 meter	Pointer to upper limit. (max. right)	"	A16, A17.	" " " "
"	"	18MC	19-16 meter	"	"	A18, A19.	" " " "

Check dial pointer at upper and lower limits and distance A-B and D-E as shown on dial stringing diagram. Have loop connected to set. Check set screws and position of tuning drum as shown on dial stringing diagram. With gang wide open all slugs should be 1-3/8" out of their coil forms. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	1st IF Amp.	6SK7	6SK7	8N	
4	2nd IF Amp.	6SK7	6SK7	8N	
5	Detector	6SQ7	6SQ7	8Q	
6	1st Audio Amp.	6SQ7	6SQ7	8Q	
7	Phase Inverter	6SQ7	6SQ7	8Q	
8	Power Output	6F6	6F6	7S	
9	Power Output	6F6	6F6	7S	
10	Rectifier	5Y3G	5Y3G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

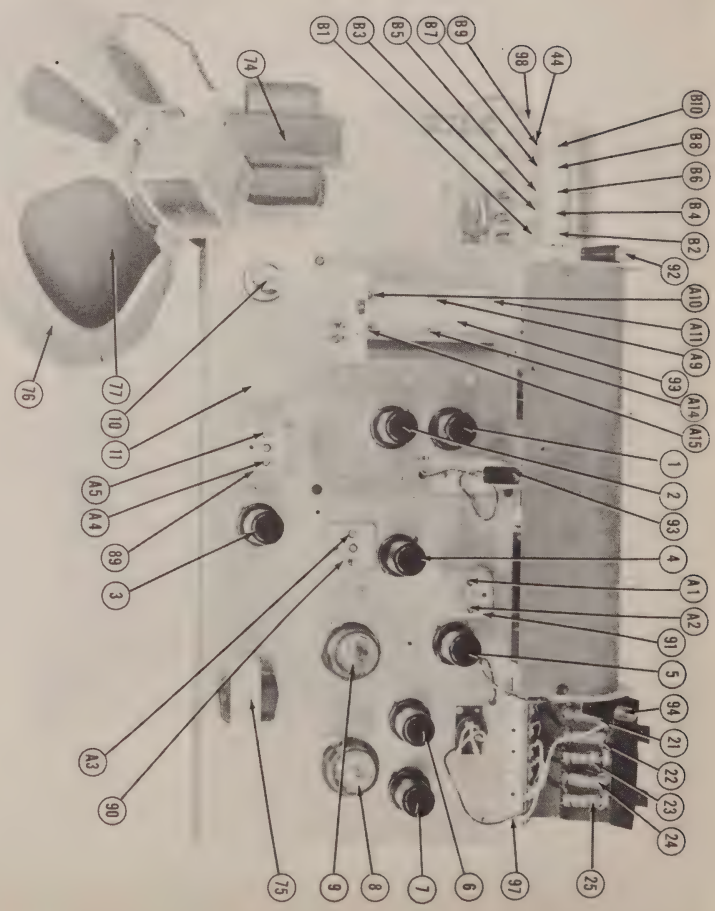
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11A	30	350	67C6-25	FP346	DY-2x30-450/20-25	EL-330	AF44J4A	UP9BJ39	● Filter
B	30	350							■ "
C	20	25						BR202A	▲ Cath. bypass
12	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	6F6 Plate Bypass
13	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	" " "
14	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	Audio Coupling
15	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	" "
16	.002	600	64B1-14	TP405	S-6-002	TC-22	684-.002	DT6D2	" "
17	.002	600	64B1-14	TP405	S-6-002	TC-22	684-.002	DT6D2	Phono Coupling*
18	.1	400	64B1-20	TP428	S-4-1	TC-1	484-.1	DT4P1	1st IF Plate Bypass
19	.1	400	64B1-20	TP428	S-4-1	TC-1	484-.1	DT4P1	Screen Bypass
20	.05	200	64B1-22	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
21	.002	600	64B1-14	TP405	S-6-002	TC-22	684-.002	DT6D2	Tone Compensation
22	.001	600	64B1-15	TP404	S-3-001	TC-21	684-.001	DT6D1	" "
23	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	" "
24	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
25	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	" "
26	50	500	65B5-11	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	RF Bypass Diode
27	50	500	65B5-11	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	RF Bypass Vol. Cont.
28	250	500	65B5-22	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Tone Compensation
29	250	500	65B5-22	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Conv. Cath. Bypass
30	140	500	65B1-26	MCB236	MOS.5-315	1FM-315	1469-.00015	5R5T15	Osc. Feedback
31	1000	500	65B7-33	MC255	MO.3-21	1FM-21	1468-.001	1W5D1	" "
32	260	500	65B1-14	MC237	MO.5-32	1FM-32	1468-.0002	5W5T2	Fixed Trimmer Osc.
33	15	500	65B5-3			MS-15			Fixed Trimmer
34	390	500	65B1-34	MCB243	MOS.5-34	MS-34	1469-.0004	5R5T4	Fixed Trimmer RF BC
35	250	500	65B1-35	MCB240	MOS.5-325	1FM-325	1469-.00025	5R5T25	Fixed Trimmer
36	65	500	65B1-27						"
37	40	500	65B1-36	MCP223	MOS.5-44	MS-44	1469-.00004	5R5Q4	Fixed Trimmer RF SW
38	200	500	65B7-21	MCB237	MOS.5-32	MS-32	1469-.0002	5R5T2	Ant. Coupling
39	35	500	65B1-30						Fixed Trimmer
40	500	500	65B5-27	MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
41	20	500	65B7-5	MC220	MO.5-425	MS-42		5W5Q2	RF Coupling
42	50	500	65B5-11	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.
43	50	500	65B5-11	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Feedback
44	60	500	65B5-13			MS-46			Fixed Trimmer PB

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
45A	1 Meg.	1	75B3-3	DTM289	D18-137XX		Volume Control
B	Shaft		Not Req.	SS25	E		Attach to 45A per instructions
C	Switch		" "	M26	41		" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	
46	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or. Ant. Loading
47	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. RF Grid Load
48	10KΩ	1	60B14-103	BTA-10K	Br.-Blk.-Or. RF Plate Load
49	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Converter Grid
50	8200Ω	1	60B14-822	BW-1-8200	Gray-Red-Red Screen Dropping BC
51	10KΩ	5	61A1-3	AB-10K	Screen Dropping
52	100Ω	½	60B8-101	BTS-100	Br.-Blk.-Br. Converter Cathode
53	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Converter Grid
54	1500Ω	½	60B8-152	BTS-1500	Br.-Grn.-Red 1st IF Cathode
55	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. AVC Network
56	470Ω	½	60B8-471	BTS-470	Yl.-Vi.-Br. 2nd IF Cathode
57	1000Ω	½	60B8-102	BTS-1000	Br.-Blk.-Red 1st IF Plate Load
58	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or. RF Filter
59	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. Diode Load
60	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Grid
61	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. 1st AF Plate Load
62	1500Ω	½	60B8-152	BTS-1500	Br.-Grn.-Red 1st AF Cathode
63	1000Ω	½	60B8-102	BTS-1000	Br.-Blk.-Red Inverter Cathode
64	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. Inverter Plate Load
65	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. Feedback
66	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
67	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Inverter Grid
68	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
69	270Ω	2	60B20-271	BW-2-270	Red-Vi.-Br. Output Cathodes
70	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Br. Tone Compensation
71	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. Tone Compensation
72A	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. Series Screen Phono-Used in later prod.
72B	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl. " " " " " early "
73	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. Phono Load-Not used in all models

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	ADMIRAL PART No.	STANCOR PART No.	THORDARSON PART No.	
74	117VAC @ .71A	300-300 @ .080A	5.2VAC @ 2.1A	6.3VAC @ 4A	80B2	P-8313†	T-17R34†	†Use universal mounting brackets ‡Drill new mounting holes.

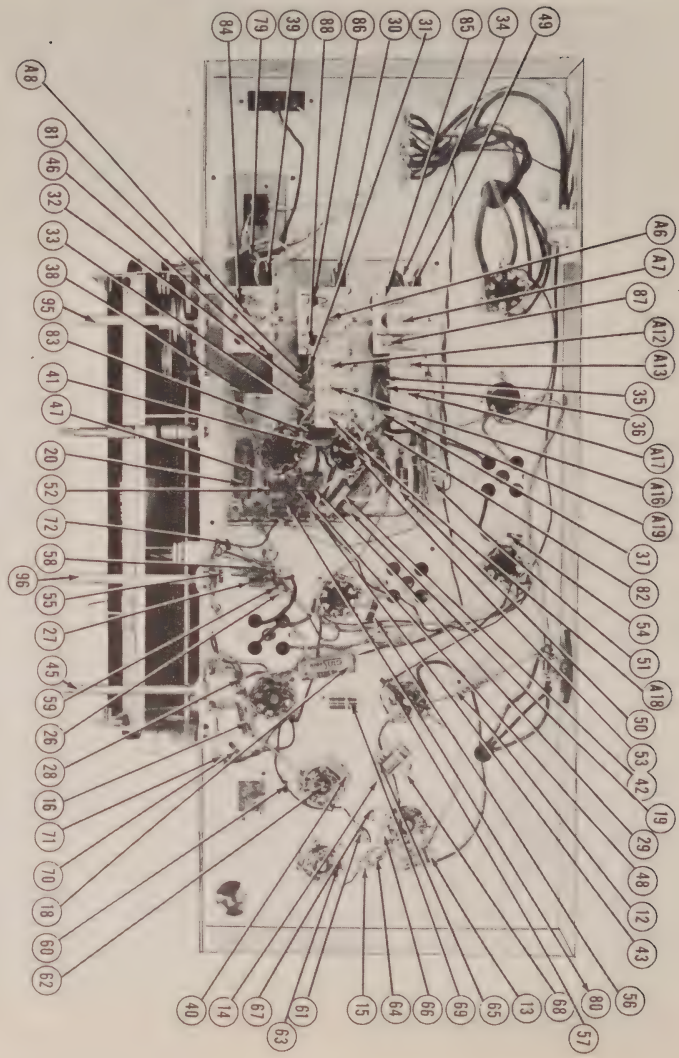
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
75	17600Ω	6.5Ω	250Ω	.4Ω	79A1	A-8312			

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	ADMIRAL PART No.	JENSEN PART No.		
76	610Ω	6.5Ω	78B12	ST-119		
	CONE DIA.	VC DIA.				
77	8-3/8"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

CHASSIS—BOTTOM VIEW



DISASSEMBLY OF RECEIVER ADMIRAL 6C71-10A1

1 - Remove the following push-on type knobs: Volume Control, Phono-Radio, Tuning, Band Switch. Remove the felt washers.

2 - To remove back board of cabinet containing antenna loop, loosen 8 Phillips head screws. Remove the top and bottom Phillips head screws. Slide back board up so the remaining Phillips head screws rest in the large slots. Remove board.

3 - Disconnect the antenna loop leads from chassis by removing the spade lugs from the terminal strip.

4 - Remove the speaker plug and phono-pickup jack from chassis. Disconnect the motor plug. Disconnect the two push-button selector switch plugs from the top of chassis.

5 - Remove the four bolts holding chassis to mounting board. Remove chassis from cabinet.

6 - Remove cover plates of station and tone selector push-button switch from top of cabinet by removing four Phillips head screws.

7 - Remove the two screws found under the above plates. Remove selector switches.

8 - Remove the speaker by removing four nuts and four lock washers.

PUSH-BUTTON ADJUSTMENTS

The push-buttons and associated adjustments from top to bottom cover the following frequency ranges: 540 to 1260KC, 540 to 1260KC, 635 to 1430KC, 635 to 1430KC, and 795 to 1600KC. To set up push-buttons to five desired stations, proceed as follows:

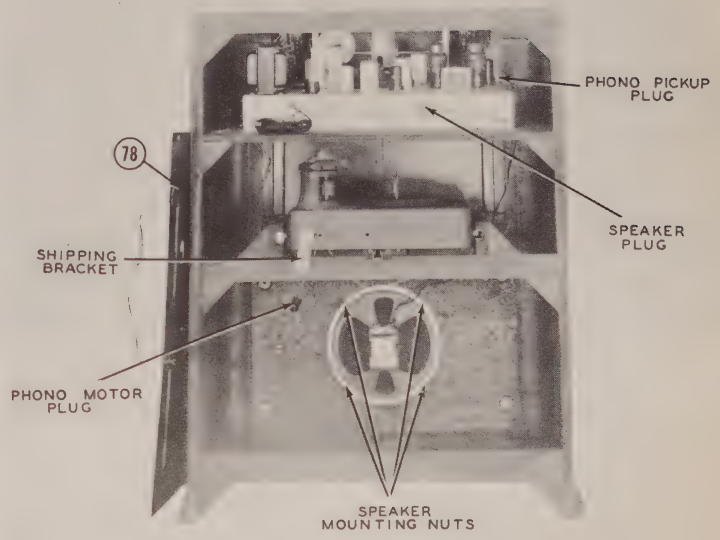
1 - Remove the escutcheon covering the push-button control unit.

2 - Turn set on and allow for warm-up period. Set band switch to "broadcast" and tune in a selected station covered by the frequency range of the top push-button and adjustments B1, B2 (540 to 1260KC).

3 - Turn band switch to push-button position. Adjust B1 to tune in the same station to maximum volume. Reduce volume with volume control and adjust B2 for maximum volume of station.

4 - Proceed in the same manner in setting up the remaining pushbuttons. Adjust B3, B5, B7, and B9 to tune in station to maximum volume, and B4, B6, B8, and B10 for maximum volume after the station is tuned in. Always select a station within tuning range associated with push-button and adjustments.

CABINET (REAR VIEW)



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
78	Loop Ant.	.8Ω		AC112		
79	Choke Ant.	2.8Ω		AB103-6		
80	Ch Osc.Cath.	15Ω		AB103-1		
81	" " 49Meter	25Ω		AB103-5		
82	RF SW Choke	0Ω		AB103-31		
83	Osc." "	0Ω		AB103-31		
84	BC Ant. Coil	8.5Ω		AC105-2		Items 84-88 ganged together-slug tuned
85	" RF "	0Ω		AB100-1		
86	" Osc. "	4.5Ω		AC101-2		
87	SW RF "	0Ω		AD102-2		
88	" Osc. "	0Ω		AD102-4		
89	Input IF	22Ω	21.4Ω	7287	16-6658	
90	Interstage IF		23Ω	7282		
91	Output IF	22.5Ω	22.2Ω	7288	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ADMIRAL PART No.		INSTALLATION NOTES
92	Bayonet	6-8	0.15	Brown	81A1-8		Type 47
93	"	6-8	0.15	"	81A1-8		" "
94	"	6-8	0.15	"	81A1-8		" "

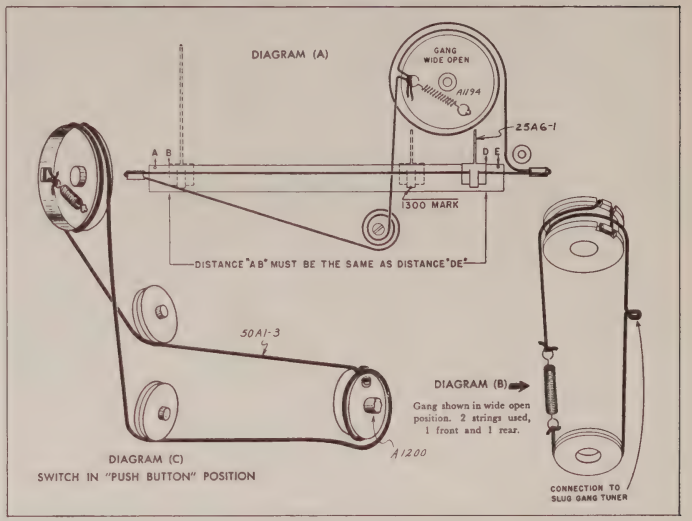
MISCELLANEOUS

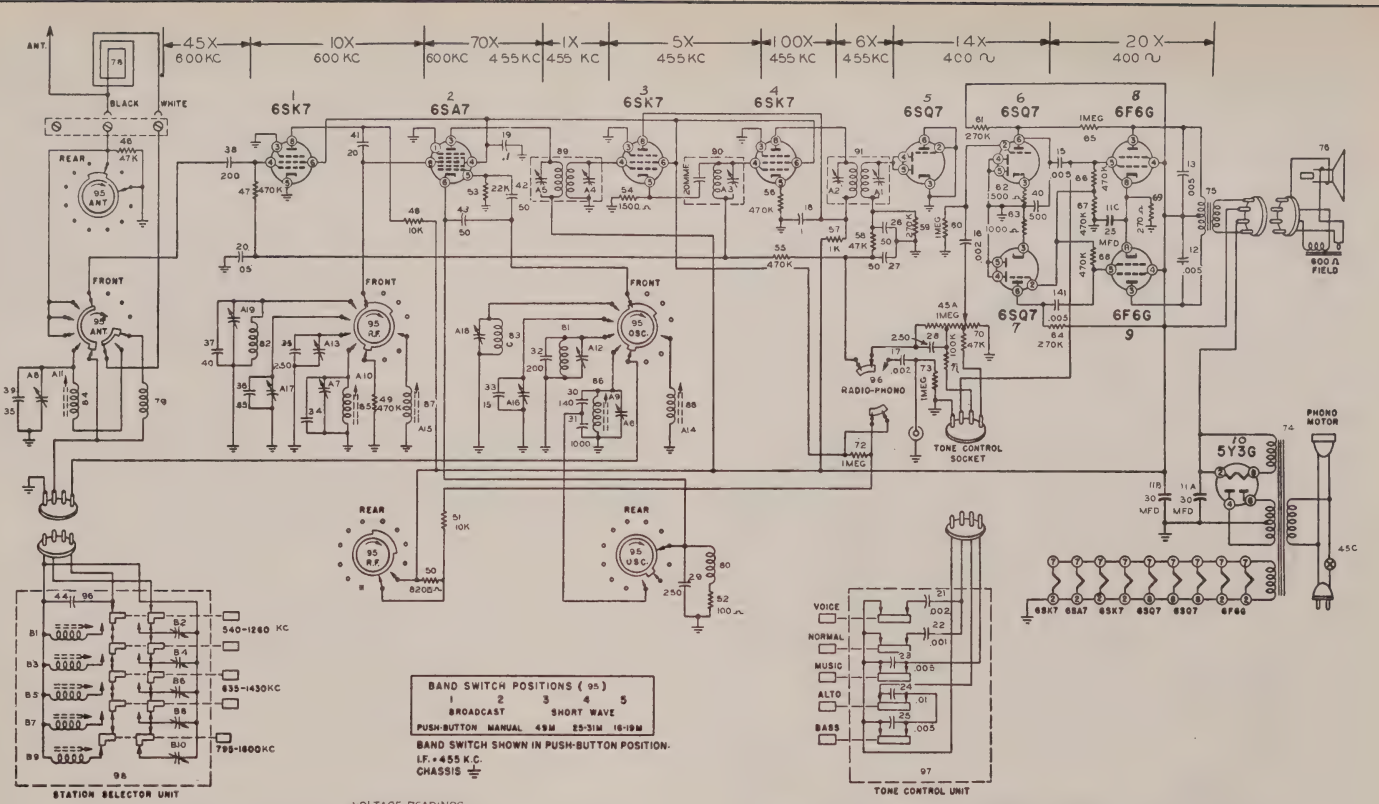
ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
95	Band Switch	73B8-2, 3, 4	
96	Switch	76A3	Radio-Phono.
97	"	76B4	Tone Control Unit
98	"	76B5	Station Selector Unit
A6	BC Osc. Trimmer	66A12-5	3-40 MMF
A7	BC RF Trimmer	66A12-5	" "
A8	BC Ant. Trimmer	66A12-5	" "
A12	49M Osc. Trimmer	66B8-3	3-40 MMF
A16	25-31M Osc. "		" "
A18	16-19M " "		" "
A13	49M RF Trimmer	66B8-3	3-40 MMF
A17	25-31M RF "		" "
A19	16-19M " "		" "
B10	Trimmer	66A12-1	Auto. Tun. 12-170 MMFD
B8	"	66A12-2	Auto. Tun. 25-290 MMFD
B6	"		" " " "

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

B4	Trimmer	66A12-3	Auto. Tun. 40-400 MMFD
B2	"		" " " "
	Dial Scale	21C21	Glass
	Knobs	33A12-1	Walnut
	Push Buttons	33B6-1	Numbers 1 and 5
	" "	33B6-2	" 2 " 4
	" "	33B6-3	Number 3
	Slug	71B1-3	Tuning (BC RF) (BC Osc.)
	"	71B1-13	" (BC Antenna)
	"	71B1-9	" (SW RF) (SW Osc.)
	"	71B1-14	Push Button Unit





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-1.5V.DC	0V.	70V.DC	6.3V.AC	165 V.DC
2	6SA7	0V.	0V.	240V.DC	70V.DC	0V.	.85V.DC	6.3V.AC	0V.
3	6SK7	0V.	0V.	0V.	0V.	4.2V.DC	70V.DC	6.3V.AC	240V.DC
4	6SK7	0V.	0V.	0V.	-.05V.DC	2.5V.DC	70V.DC	6.3V.AC	240V.DC
5	6SQ7	0V.	0V.	0V.	-.3V.DC	-.3V.DC	0V.	6.3V.AC	0V.
6	6SQ7	0V.	0V.	.97V.DC	0V.	0V.	113V.DC	6.3V.AC	0V.
7	6SQ7	0V.	0V.	.55V.DC	0V	0V.	113V.DC	6.3V.AC	0V.
8	6F6	0V.	0V.	240V.DC	245V.DC	0V.	95V.DC	6.3V.AC	16V.DC
9	6F6	0V.	0V.	240V.DC	245V.DC	0V.	240V.DC	6.3V.AC	16V.DC
10	5Y3G	0V.	290V.DC	0V.	315V.AC	0V.	300V.AC	0V.	290V.DC

RESISTANCE READINGS

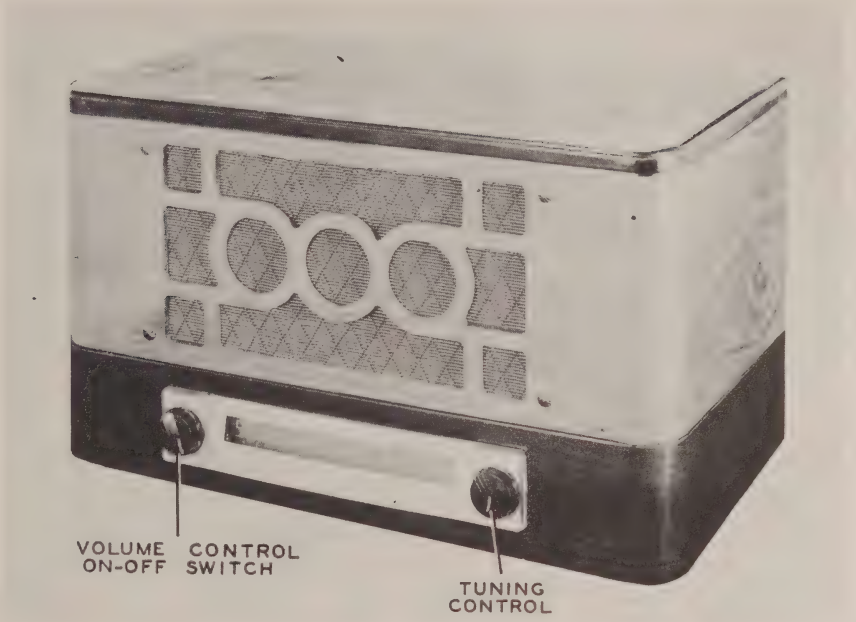
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	1.05MEG	0Ω	105KΩ	0Ω	105KΩ
2	6SA7	0Ω	0Ω	90KΩ	105KΩ	22KΩ	110Ω	0Ω	4.2Ω
3	6SK7	0Ω	0Ω	0Ω	600KΩ	1.4KΩ	105KΩ	0Ω	105KΩ
4	6SK7	0Ω	0Ω	0Ω	600KΩ	400Ω	105KΩ	0Ω	105KΩ
5	6SQ7	0Ω	0Ω	0Ω	175KΩ	175KΩ	0Ω	0Ω	0Ω
6	6SQ7	0Ω	0Ω	1.5KΩ	0Ω	0Ω	320KΩ	0Ω	0Ω
7	6SQ7	0Ω	0Ω	950Ω	0Ω	0Ω	380KΩ	0Ω	0Ω
8	6F6	0Ω	0Ω	90KΩ	90KΩ	875KΩ	450KΩ	0Ω	270Ω
9	6F6	0Ω	0Ω	90KΩ	90KΩ	875KΩ	90KΩ	0Ω	270Ω
10	5Y3G	INF	90KΩ	INF	88Ω	INF	80Ω	INF	90KΩ

NOTE: READINGS TAKEN IN BROADCAST POSITION. VOLUME CONTROL FULL ON.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ADMIRAL
CHASSIS 4A1



ADMIRAL
CHASSIS 4A1

ADMIRAL CHASSIS 4A1

TRADE NAME Admiral Chassis 4A1 (Model 6T06)
MANUFACTURER Admiral Corp., 3800 Cortland Street, Chicago 47, Ill.
TYPE SET Battery Operated Superheterodyne Radio
TUBES (FOUR) Types, 1A7GT 1st Det.-Osc., 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output

POWER SUPPLY 90 Volt "B" Battery & 1½ Volt "A" Battery in Pack Form
TUNING RANGE—BROADCAST 535-1630KC **SHORT WAVE** 12.3MA @ 90V DC plus 217MA @ 1.5V DC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to cap (grid) of 1A7. Low side to ch chassis.	455KC	High freq. end of dial.	Across voice coil	A1,A2.	Adjust for maximum output.
"	"	"	"	"	A3,A4.	" " " "
200 MMFD	High side to ant. lead. Low side to chassis.	1630KC	"	"	A5,A6.	Adjust for maximum output. Before adjusting check that slugs are 1-3/8" or more outside of coil forms 38 and 39.
"	"	1300KC	1300KC	"	39,38.	Adjust for maximum output. Turn slugs in or out for maximum.

Check dial pointer as shown on dial stringing diagram. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	1st Det.-Osc.	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	4	150	67A4-2	TC40	M-4-150	UT-41	PRS150-4	BR415	RF Bypass Pwr. Supp.
6	.005	600	64B1-12	TP408	S-6-005	TC-25	684-.005	DT6D5	3Q5 Plate Bypass
7	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
8	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
9	.05	200	64B1-32	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
10	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	IF Plate Bypass
11	.002	600	64B1-14	TP405	S-6-002	TC-22	684-.002	DT6D2	IF Grid Bypass
12	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	Screen Bypass
13	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	Osc. Anode Coupling
14	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Coupling
15	250	500	65B7-22	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
16	250	500	65B7-22	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
17	100	500	65B7-17	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cap.
18	800	500	65B5-31	MC251	M0.3-38	MS-38	1464-.0008	1W5T8	Feedback
19	800	500	65B5-31	MC251	M0.3-38	MS-38	1464-.0008	1W5T8	Fixed Padder
20	200	500		MC237	M0.5-32	1FM-32	1468-.0002	5W5T2	Fixed Trimmer
21	120	500		MC236	M0.5-315	1FM-315	1479-.00015	5W5T15	" "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg	1	75b1-1	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions.
C	Switch		" "	M27	42	SW-A2	" " " " "

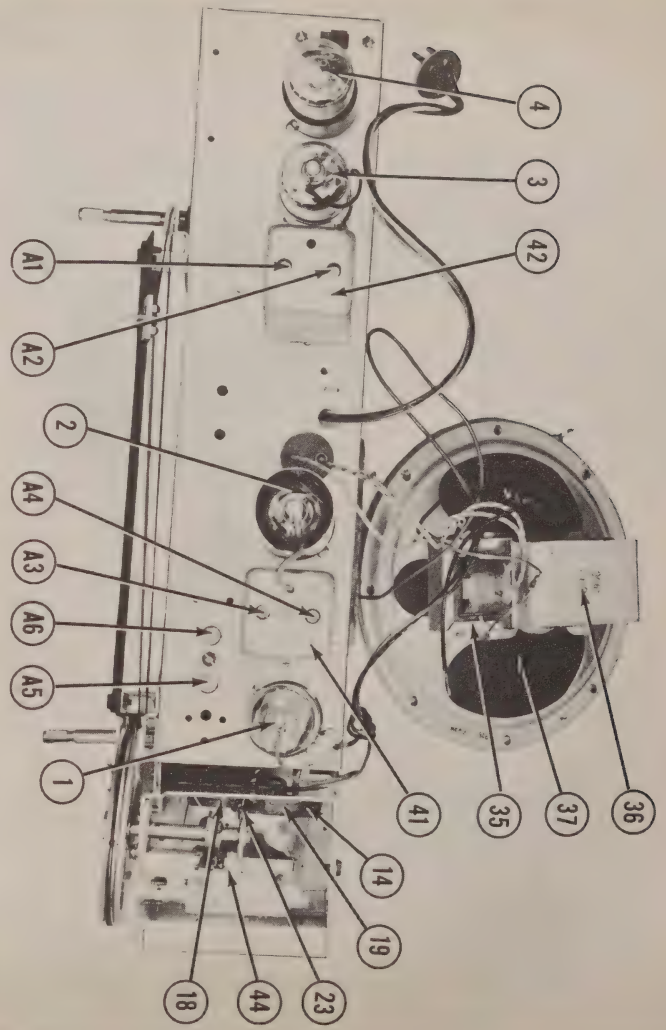
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
23	15KΩ	½	60B8-153	BTS-15K	Br.-Grn.-Or. Ant. Loading
24	470KΩ	¼	60B2-474	BTS-470K	Yl.-Vi.-Yl. AVC Network
25	220KΩ	¼	60B8-224	BTS-220K	Red-Red-Yl. Osc. Grid
26	33KΩ	½	60B8-333	BTS-33K	Or.-Or.-Or. Screen Dropping
27	4.7 Meg.	¼	60B2-475	BTS-4.7 Meg	Yl.-Vi.-Grn. IF Grid
28	2200Ω	¼	60B2-222	BTS-2200	Red-Red-Red IF Plate Filter
29	2.2 Meg.	¼	60B2-225	BTS-2.2 Meg	Red-Red-Grn. AVC Network
30	4.7 Meg.	¼	60B2-475	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
31	1 Meg.	¼	60B2-105	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
32	1 Meg.	¼	60B2-105	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
33	390Ω	¼	60B2-391	BW-½-390	Or.-White-Br. Fixed Bias
34	.75Ω	½	61A2-1	BW-½-.82	Vi.-Grn.-Silver Series Filament

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
35	6800Ω	2.7Ω	750Ω	.66Ω	Part of 78B3	A-3878*	T-13S37*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

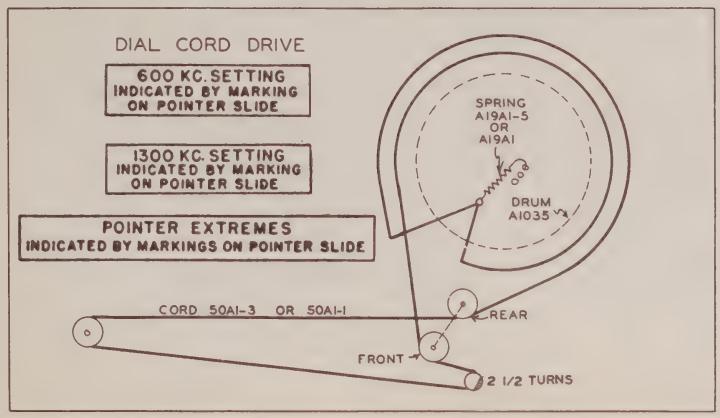
ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
36	PM	2.7Ω	78B3	ST-112		Part 78B5 Used in early models
	CONE DIA.	VC DIA.				
37	5-7/8"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

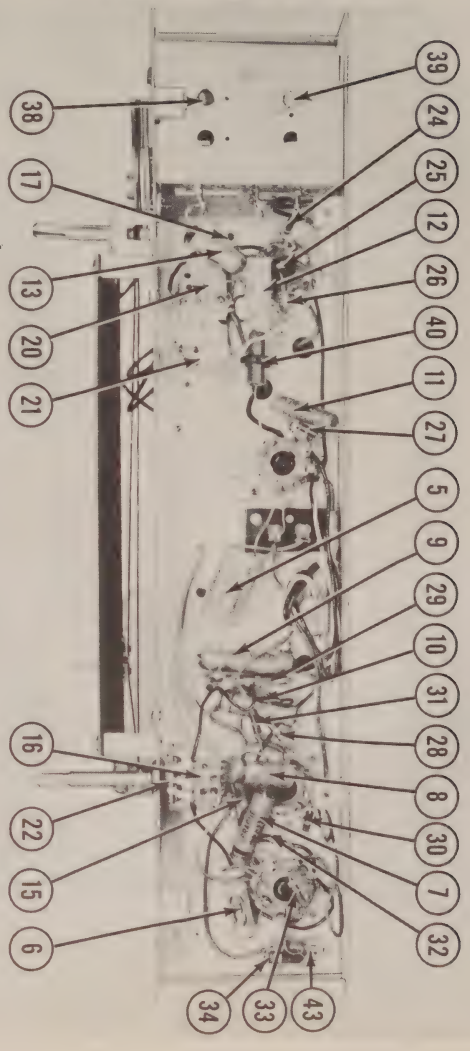
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	MEISSNER PART No.	INSTALLATION NOTES
38	Ant. Coil	3.5Ω		AC105-1		Items 38 and 39 slug gang tuned
39	Osc. Coil	8Ω		AC1020		Part No. AB104-4 on early models
40	RF Choke	16Ω		AB103-1		
41	Input IF	14.5Ω	18Ω	72B5	16-6658	
42	Output IF	16.5Ω	13.5Ω	72B6	16-6660	

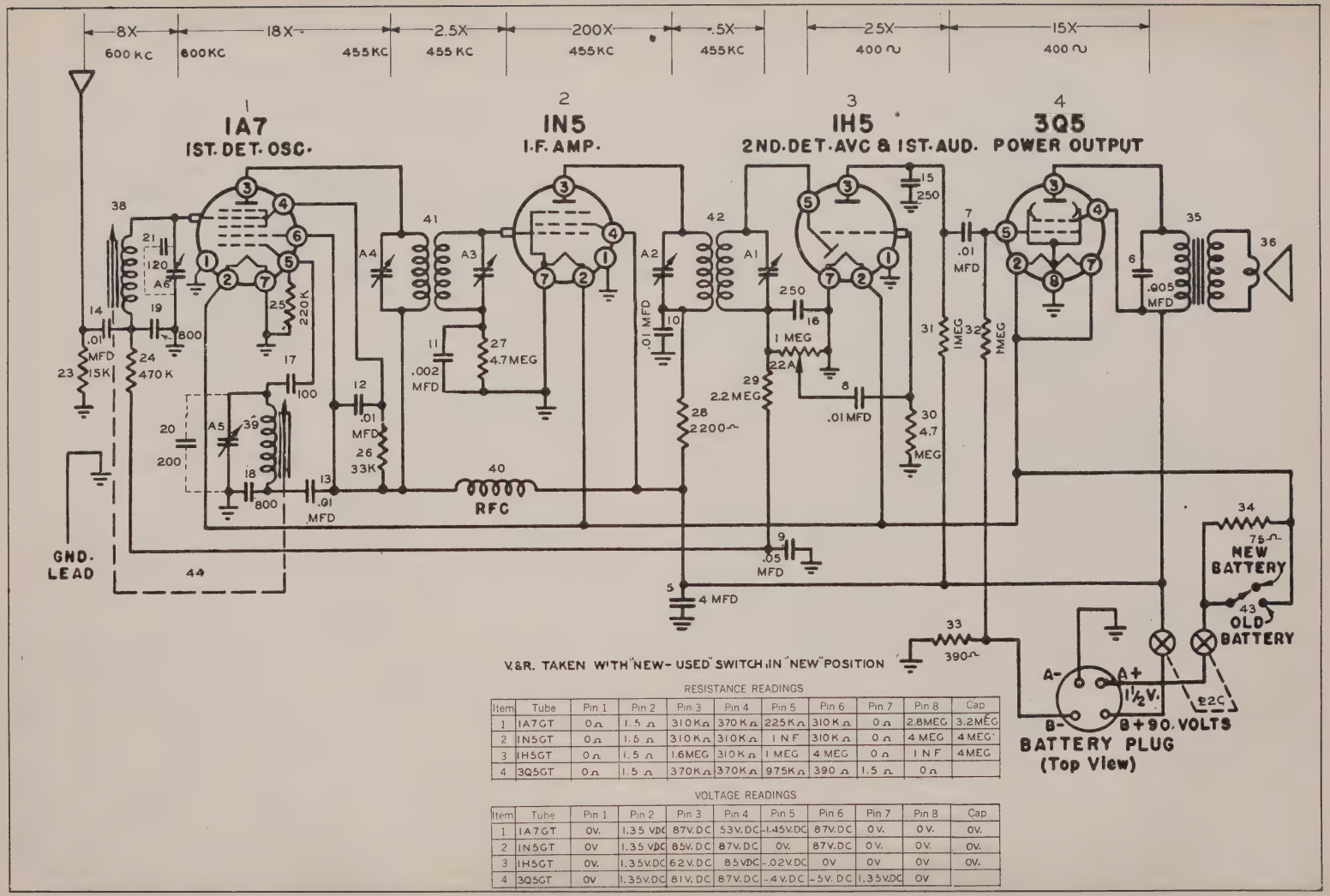
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
43	Switch	77B1-6	Battery Economizer SPST
43A	Switch	88A1-6	" " " Early Models
44	Tuning Assby.	71B1-3 & 71B1-4	Iron Slugs used in Conjunction with Items 38 & 39
A5	Trimmer	66A21-1	Osc. Adjustment
A6	"		Ant. Adjustment
A5	Trimmer	66A9-1	Osc. Adjustment-Used in early models
A6	"		Ant. Adjustment- " " " "
	Cable & Plug	A1026	Battery
	Knob	33A1-2	
	"	A1028	Used in early models
	Dial Pointer	25A3	
	" "	25A9-1	Used in early models
	Dial Scale	21B6-1	Glass
	" "	21b13	" -Used in early models


DIAL CORD DRIVE
600 KC. SETTING INDICATED BY MARKING ON POINTER SLIDE
1300 KC. SETTING INDICATED BY MARKING ON POINTER SLIDE
POINTER EXTREMES INDICATED BY MARKINGS ON POINTER SLIDE
SPRING A19A1-5 OR A19A1
DRUM A1035
CORD 50A1-3 OR 50A1-1
REAR
FRONT
2 1/2 TURNS

CHASSIS—BOTTOM VIEW





V&R. TAKEN WITH "NEW-USED" SWITCH IN "NEW" POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0 Ω	1.5 Ω	310 KΩ	370 KΩ	225 KΩ	310 KΩ	0 Ω	2.8MEG	3.2MEG
2	1N5GT	0 Ω	1.5 Ω	310 KΩ	310 KΩ	1 N F	310 KΩ	0 Ω	4 MEG	4 MEG
3	1H5GT	0 Ω	1.5 Ω	1.6MEG	310 KΩ	1 MEG	4 MEG	0 Ω	1 N F	4MEG
4	3Q5GT	0 Ω	1.5 Ω	370 KΩ	370 KΩ	975 KΩ	390 Ω	1.5 Ω	0 Ω	

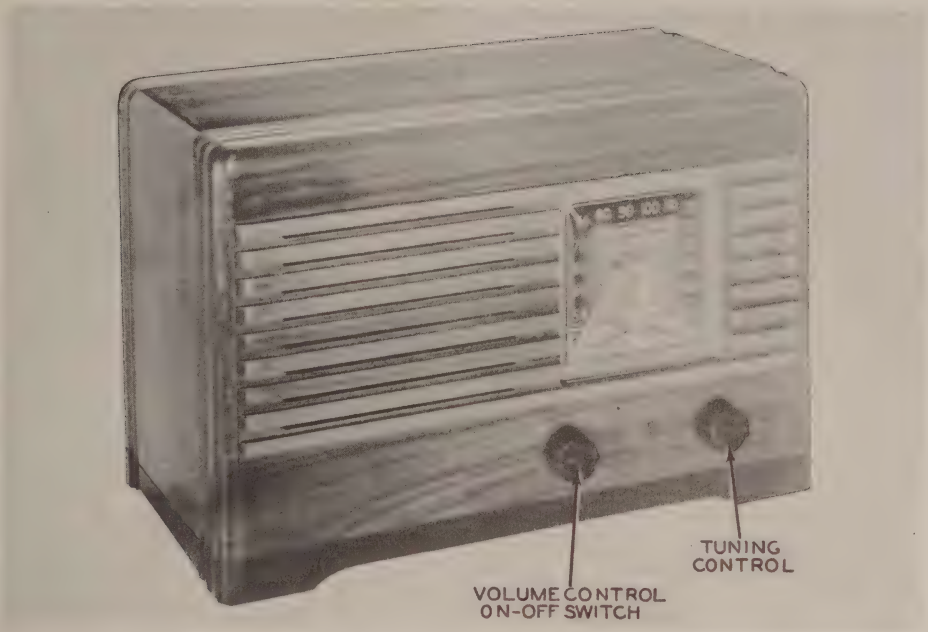
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.35 VDC	87V. DC	53V. DC	-1.45V. DC	87V. DC	0 V.	0 V.	0V.
2	1N5GT	0V	1.35 VDC	85V. DC	87V. DC	0V.	87V. DC	0 V.	0V.	0V.
3	1H5GT	0V.	1.35V. DC	62V. DC	85VDC	-.02V. DC	0V	0V	0V	0V.
4	3Q5GT	0V	1.35V. DC	81V. DC	87V. DC	-4V. DC	-5V. DC	1.35V. DC	0V	

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to ground.

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

WATTERSON
MODEL 4581



WATTERSON
MODEL 4581

WATTERSON MODEL 4581

TRADE NAME Watterson Model 4581
MANUFACTURER Watterson Radio Mfg. Corp., 2700 Swiss Ave., Dallas, Texas
TYPE SET AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE) Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.

POWER SUPPLY 117 Volts AC-DC Rating .240 Amps. @ 117 V.AC
TUNING RANGE—BROADCAST 540-1650KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1400KC	1400KC	"	A5,A6	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.
	"	600KC	Tune in 600KC signal.	"	A7	Rock dial and adjust for maximum output. Repeat adjustments A5 and A6 at 1400KC.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: WATTERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter		12SA7	8R	
2	IF Amp.		12SK7	8N	
3	Det.-AVC-AF		12SQ7	8C	
4	Power Output		50L6GT	7AC	
5	Rectifier		35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WATTERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	30	150	19W2	FP306	DY-30+20-150/25-25	EL-324	AF64D4A	UP4CJ2	■ Filter
(B)	20	150							▲ "
(C)	20	25							"
6(A)	40	150		FP311	DY-2x40-150/40-25	EL-343	AF86D4A	UP6CJ41	■ Filter*
(B)	30	150							▲ "
(C)	20	25							"
7	.1	400	5W13	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
8	.02	400	5W7	TP423	S-4-02	TC-12	484-.02	DT4S2	50Ls Plate Bypass
9	.01	600	5W21	TP421	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
10	.005	400	5W2	TP408	S-4-005	TC-25	484-.005	DT6D5	" "
11	.05	400	5W9	TP426	S-4-05	TC-15	484-.05	DT4S5	Cath. Bypass
12	.05	400	5W9	T.426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
13	.001	600	5W1	TP404	S-6-001	TC-21	684-.001	DT6D1	Ant. Coupling
14	250	500	6W2	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
15	250	500	6W2	MC240	M0.5-325	1FM-325	1438-.00025	5W5T25	RF Bypass Diode
16	250	500	6W2	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Tone Compensation
17	500	500	6W3	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	Osc. Grid Cond.

Used in later models

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WATTERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18(A)	500KΩ	1	13W1	MR48	D13-133	AM-6C-2	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	RS-2	Attach to 16A per instructions.
(C)	Switch		" "	M26	41	SW-A	" " " " "

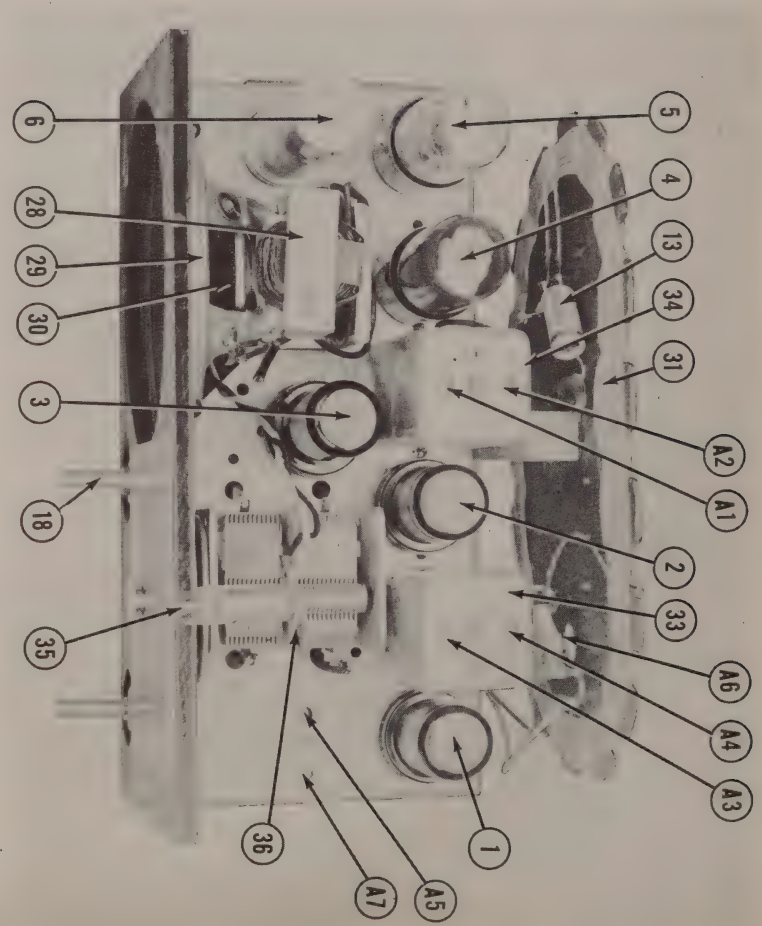
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WATTERSON PART No.	IRC PART No.	IDENTIFICATION CODES
19	20KΩ	½	9W6	BTS-22K	Red-Blk.-Or. Osc. Grid
20	250Ω	½	9W11	BW-½-270	Red-Grn.-Br. IF Cathode
21	3.3 Meg.	½		BTS-3.3Meg	Or.-Or.-Grn. AVC Network
22	50KΩ	½	9W4	BTS-47K	Yl.-Vi.-Or. Diode Load
23	10 Meg.	½	9W9	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
24	220KΩ	½	9W5	BTS-220K	Red-Blk.-Yl. 1st AF Plate Load
25	150Ω	½	9W2	BW-½-150	Br.-Grn.-Br. Output Cathode
26	500KΩ	½	9W3	BTS-470K	Grn.-Blk.-Yl. Output Grid
27	25Ω	½		BW-½-25	Red-Grn.-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: WATTERSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
28	1560Ω	3.05Ω	186Ω	.86Ω	12W1	A-3876†	T-14S82†		†Bend mounting tabs down and mount on the original brkt.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: WATTERSON PART No.	JENSEN PART No.		INSTALLATION NOTES
29	FIELD RES. 450Ω	VC IMP. 3.05Ω	22W20	ST-450		
30	CONE DIA. 4-7/8"	VC DIA. 5/8"	CONE HAS SPECIAL ADJUSTMENT FEATURE-FOR REPLACEMENT ORDER FROM MANUFACTURER			

R F COILS

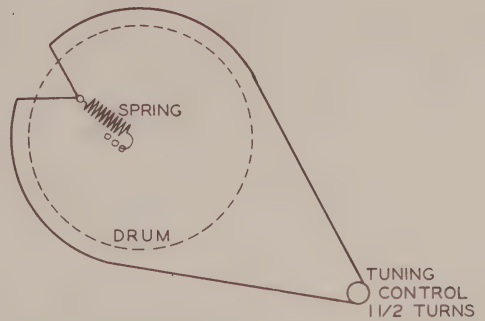
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: WATTERSON PART No.	MEISSNER PART No.	INSTALLATION NOTES
31	Loop Ant.	0Ω	1Ω	3W31		
32	Osc. Coil	.5Ω	3.5Ω	3W40	14-1340	
33	Input IF	24.5Ω	23.5Ω	3W20	16-6656	
34	Output IF	26Ω	19.5Ω	3W21	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: WATTERSON PART No.		INSTALLATION NOTES
35	bayonet	6-8	0.15	brown	23W2		

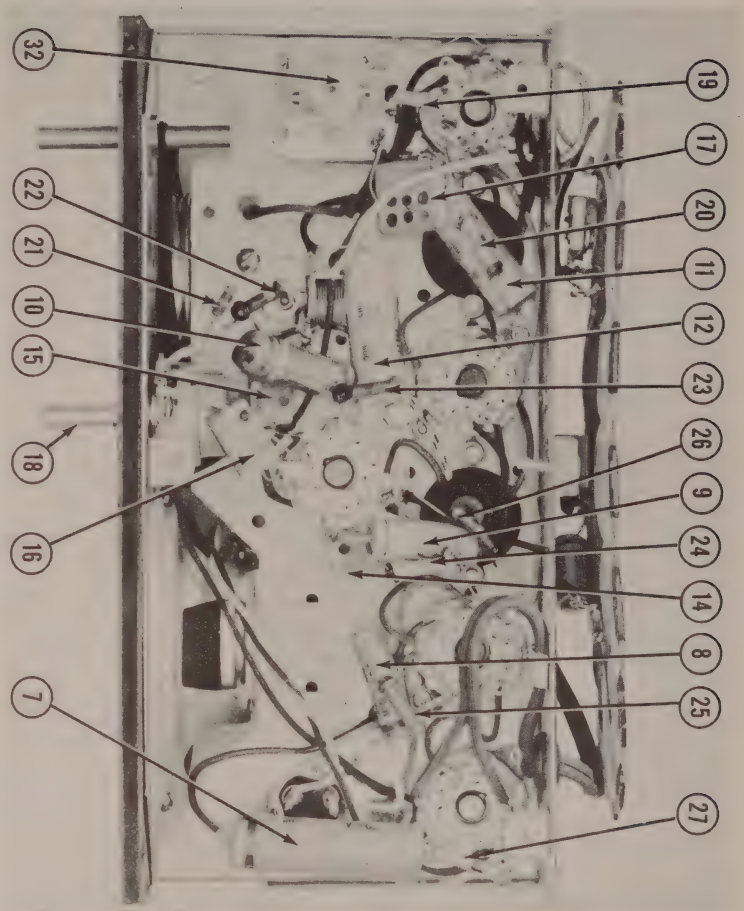
MISCELLANEOUS

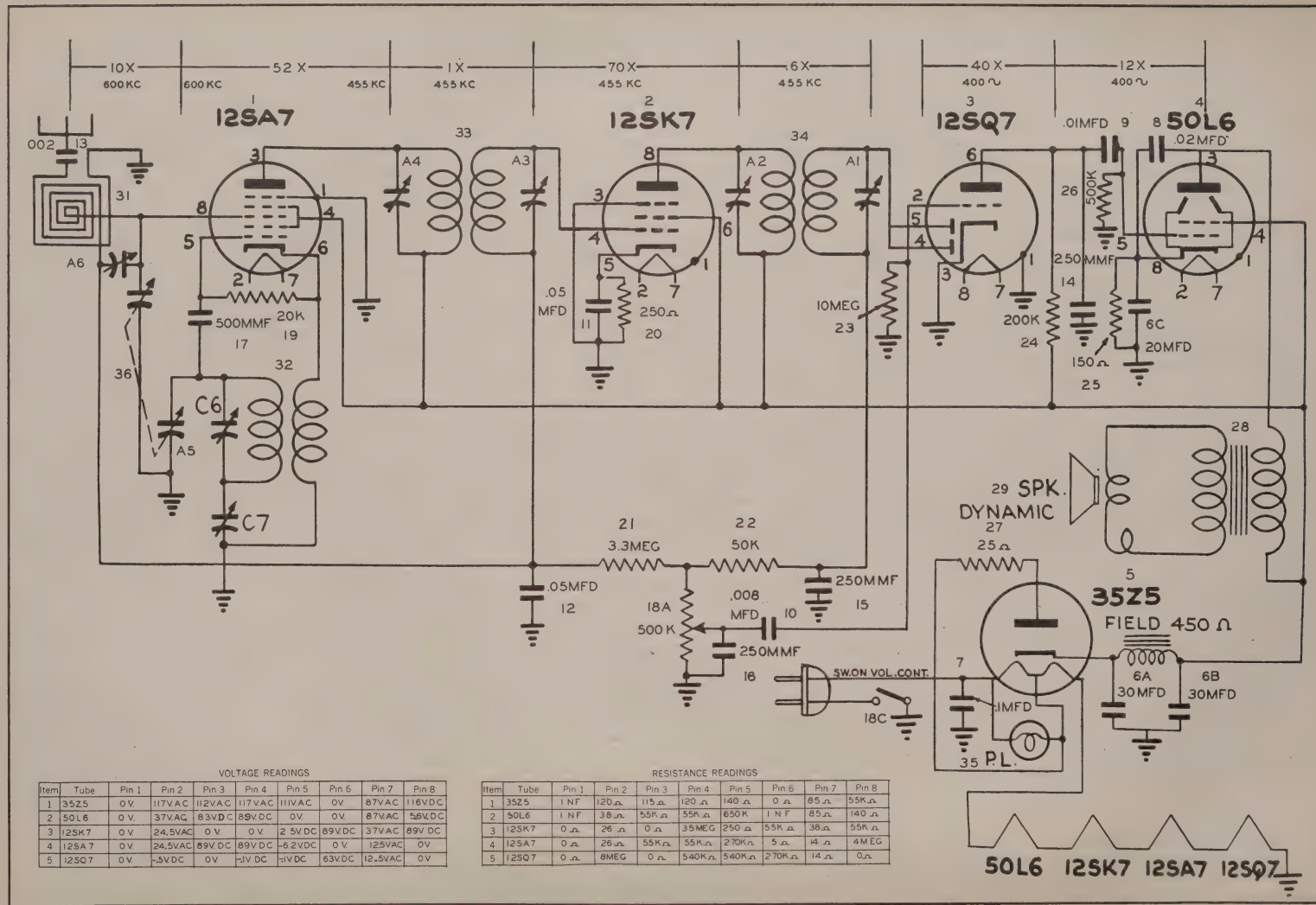
ITEM No.	PART NAME	WATTERSON PART No.	NOTES
36	Tuning Cap.	7-M1961	2 Gang Variable Cap.
A6	Trimmer	8W1	Antenna Trimmer 30 MMFD
A5	"	3W30	High freq. osc. trimmer
A7	Padder	Part of 3W30	Low freq. osc. padder



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	35Z5	0 V.	117 VAC	112 VAC	117 VAC	111 VAC	0V	87 VAC	116 VDC
2	50L6	0 V.	37 VAC	83 VDC	89 VDC	0V.	0V.	87 VAC	5.6 VDC
3	12SK7	0 V.	24.5 VAC	0 V.	0 V.	2.5 VDC	89 VDC	37 VAC	89 V DC
4	12SA7	0 V.	24.5 VAC	89 V DC	89 V DC	-6.2 VDC	0 V.	125 VAC	0V
5	12SQ7	0 V.	-.5 VDC	0 V.	-1 V DC	-1 V DC	63 VDC	12.5 VAC	0 V

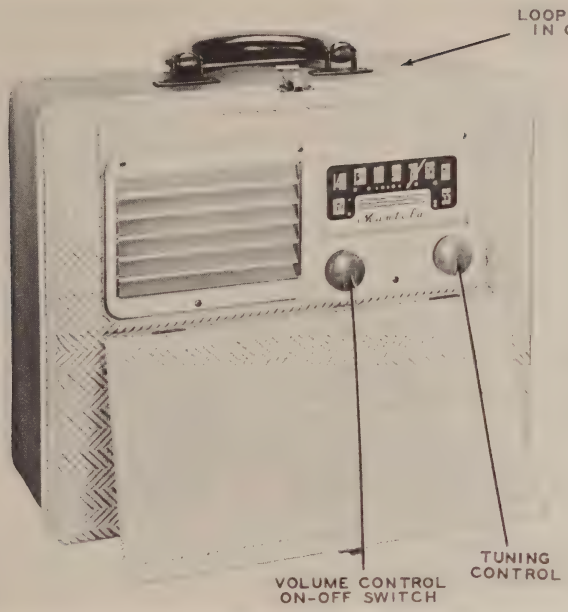
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	35Z5	1 NF	120 Ω	115 Ω	120 Ω	140 Ω	0 Ω	85 Ω	55K Ω
2	50L6	1 NF	38 Ω	55K Ω	55K Ω	650 K	1 NF	85 Ω	140 Ω
3	12SK7	0 Ω	26 Ω	0 Ω	35 MEG	250 Ω	55K Ω	38 Ω	55K Ω
4	12SA7	0 Ω	26 Ω	55K Ω	55K Ω	270K Ω	5 Ω	14 Ω	4 MEG
5	12SQ7	0 Ω	8MEG	0 Ω	540K Ω	540K Ω	270K Ω	14 Ω	0 Ω

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MANTOLA
MODELS R662, R662N



MANTOLA MODEL R662

TRADE NAME	Mantola Models R662, R662N
SUPPLIER	B. F. Goodrich Co., 500 South Main Street, Akron, Ohio
TYPE SET	Three Power Portable AC-DC Battery Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 1N5GT RF Amp., 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output, 117Z6GT Rectifier
POWER SUPPLY RATING	105-125 Volts AC-DC or 90 Volt "B" Supply: 9 Volt "A" Supply in Pack Form .200 Amps. @ 117 VAC - .061 Amps. @ 9 Volt DC Plus 14.7 MA. @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to grid cap. of 1A7. Low side to B-.	455KC	Any point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If receiver is connected to AC power use isolation transformer or connect isolating cap. between generator ground lead and B- and decrease dummy ant. to .00025 MFD.
"	High side to grid cap. of 1N5. Low side to B-.	1620KC	Rotor full open. (Plates out of mesh)	"	A5	"
"	"	1400KC	Tune in 1400 KC signal.	"	A6	"
Replace	Set In Cabinet And Connect	Loop Ant.				
.00025 MFD.	High side to ant. lead. Low side to ground lead.	1400KC	Tune in 1400 KC signal.	Across voice coil	A7	Adjust for maximum output.
Disregard Next Two Adjustments IF Set Being Aligned Is A Model With A Fixed Loop Loading Coil.						
.00025	High side to ant. lead. Low side to ground lead.	600KC	Tune in 600KC signal.	Across voice coil	A8	Adjust for maximum output.
"	"	1400KC	Tune in 1400 KC signal.	"	A7	Adjust for maximum output.

Use battery whenever possible when aligning. Disconnect loop and remove chassis from cabinet. Connect 50K carbon resistor across two clips from which loop was removed. Turn volume control to full volume and adjust output of signal generator no higher than is necessary to obtain output reading.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1(A)	RF Amp.	1N5GT	1N5GT	5Y	
2	Converter	1A7GT	1A7GT	7Z	
3	IF Amp.	1N5GT	1N5GT	5Y	
4	Det.-AVC-AF	1H5GT	1H5GT	5Z	
5	Power Output	3Q5GT	3Q5GT	7AP	
6	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MANTOLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	20	150	67C7-42	FP309	DY-40+20-150/100-25	EL-351		UP6CJ62	■ Filter
(B)	50	150							▲ "
(C)	100	25							"
8	.05	400	64B1-22	TP426	S-4-05	TC-15	464-.05	DT4S5	Line Filter
9	.2	400	64A2-1	TP429	S-4-2	TC-2	484-.2	DT4F2	Line Isolating
10	.002	600	64B1-14	TP405	S-3-002	TC-22	684-.002	DT6D2	3Q5 Plate Bypass
11	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
12	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	"
13	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	AVC Filter
14	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
15	.01	400	64B1-25	TP421	S-4-01	TC-11	484-.01	DT4S1	1A7 Screen
16	.25	200	64B1-28	TP430	S-4-25	TC-2	484-.25	DT4P25	Filament Bypass
17	.05	200	64B1-32	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
18	250	500	65B5-22	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
19	15	500	65B5-3						Fixed Trimmer
20	50	500	65B5-11	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
21	250	500	65B5-22	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling
22	420	500	65B1-9	MCB243	MOS.5-34	MS-34	1469-.0004	5W5T4	Fixed Trimmer

CONTROLS

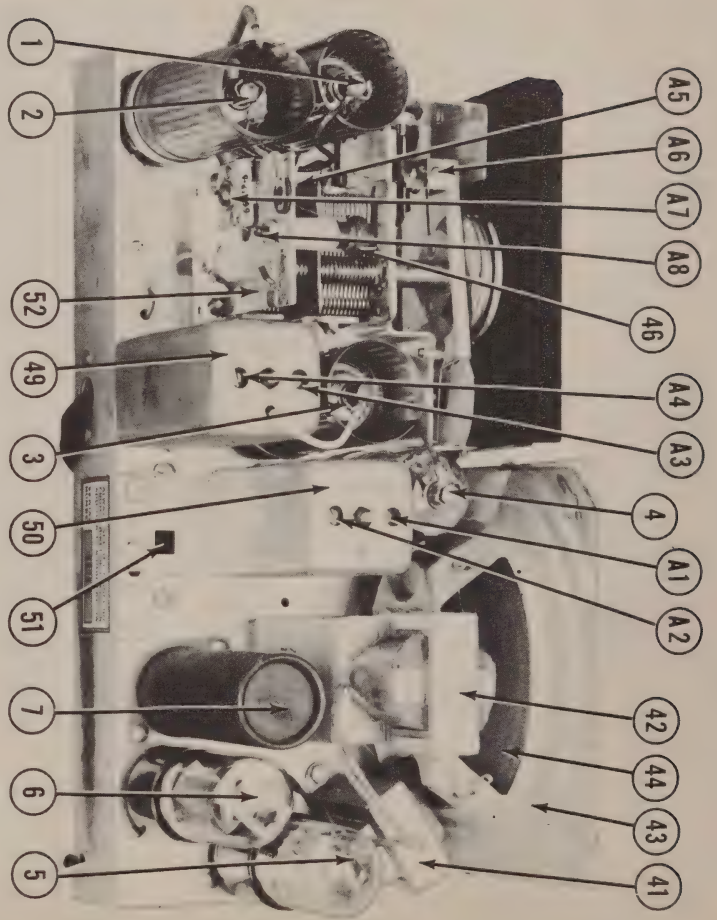
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23(A)	1 Meg.	1	75B1-100	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions
(C)	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	IRC PART No.	IDENTIFICATION CODES
24	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. AVC Network
25	220KΩ	½	60B8-224	BTS-220K	Red-Red-Yl. Osc. Grid
26	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or. Osc. Screen Dropping
27	4.7 Meg.	½	60B2-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
28	4.7 Meg.	½	60B2-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. " "
29	4.7 Meg.	½	60B2-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. " "
30	3.3 Meg.	½	60B2-335	BTS-3.3 Meg.	Or.-Or.-Grn. " "
31	15 Meg.	½	60B2-156	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid Load
32	1 Meg.	½	60B2-105	BTS-1 Meg.	Br.-Blk.-Grn. " " Plate Load
33	2.2 Meg.	½	60B2-225	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
34	2450Ω	5	61A3-5	ABA-2500*	Filament Dropping
35	22Ω	½	61A2-2	BW-½-22	Red-Red-Blk. Surge Limiter
36	1500Ω	½	60B8-152	BTS-1500	Br.-Grn.-Red Filament Shunt
37	560Ω	½	60B8-561	BTS-560	Grn.-Blue-Br. Filament Shunt
38	220Ω	½	60B8-221	BW-½-220	Red-Red-Br. Filament Shunt
39	120Ω	½	60B8-121	BW-½-120	Br.-Red-Br. Filament Shunt
40	33KΩ	½		BTS-33K	Or.-Or.-Or. Filament Dropping Shunt

*Adjust Tap to 2450Ω

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000)	REPLACEMENT DATA: MANTOLA PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
41	65MA	255Ω	5H	74A5	C-1325†	T-14C62†	†Drill New Mounting Holes

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
42	9650Ω	2Ω	750Ω	.82Ω	Part of 76B6	A-3822‡	T-14S84‡		‡Bend mounting tabs down and mount on original bracket. File slots if necessary.

SPEAKER

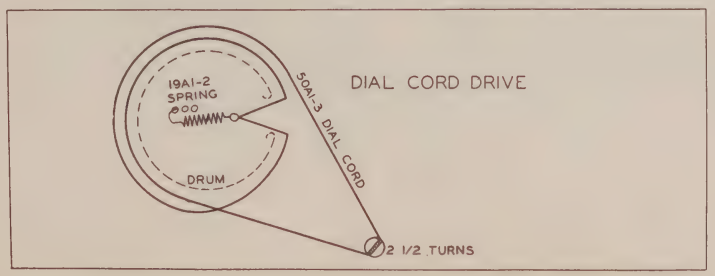
ITEM No.	RATINGS		REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	¼ AMP.				
43	P.M.	2¾	76e6	ST1C7		Drill New Mounting Holes.
	CO.E Dia.	¼ DIA.				
44	5-1/4"	5/8"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: MEISSNER PART No.	INSTALLATION NOTES
45	Loop Ant.	0Ω	.3Ω			
46	Ant. Load Coil	2.6Ω		A-11t		Some models use fixed coil; omit
47	RF Coil	3.7Ω		73A1-3		Slug for coil 73A1-3
48	Osc. Coil	2.5Ω	6Ω	69A7	14-1 [illegible]	
49	Input IF	15Ω	15Ω	72B9-2	16-9[illegible]	
50	Output IF	18Ω	16Ω	72B10-2	16-9[illegible]	

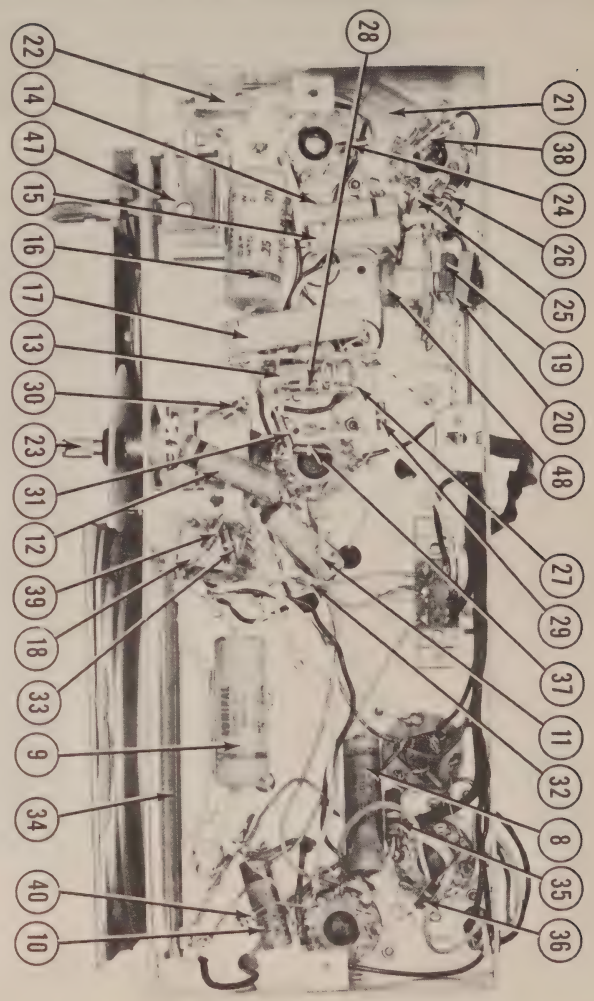
MISCELLANEOUS

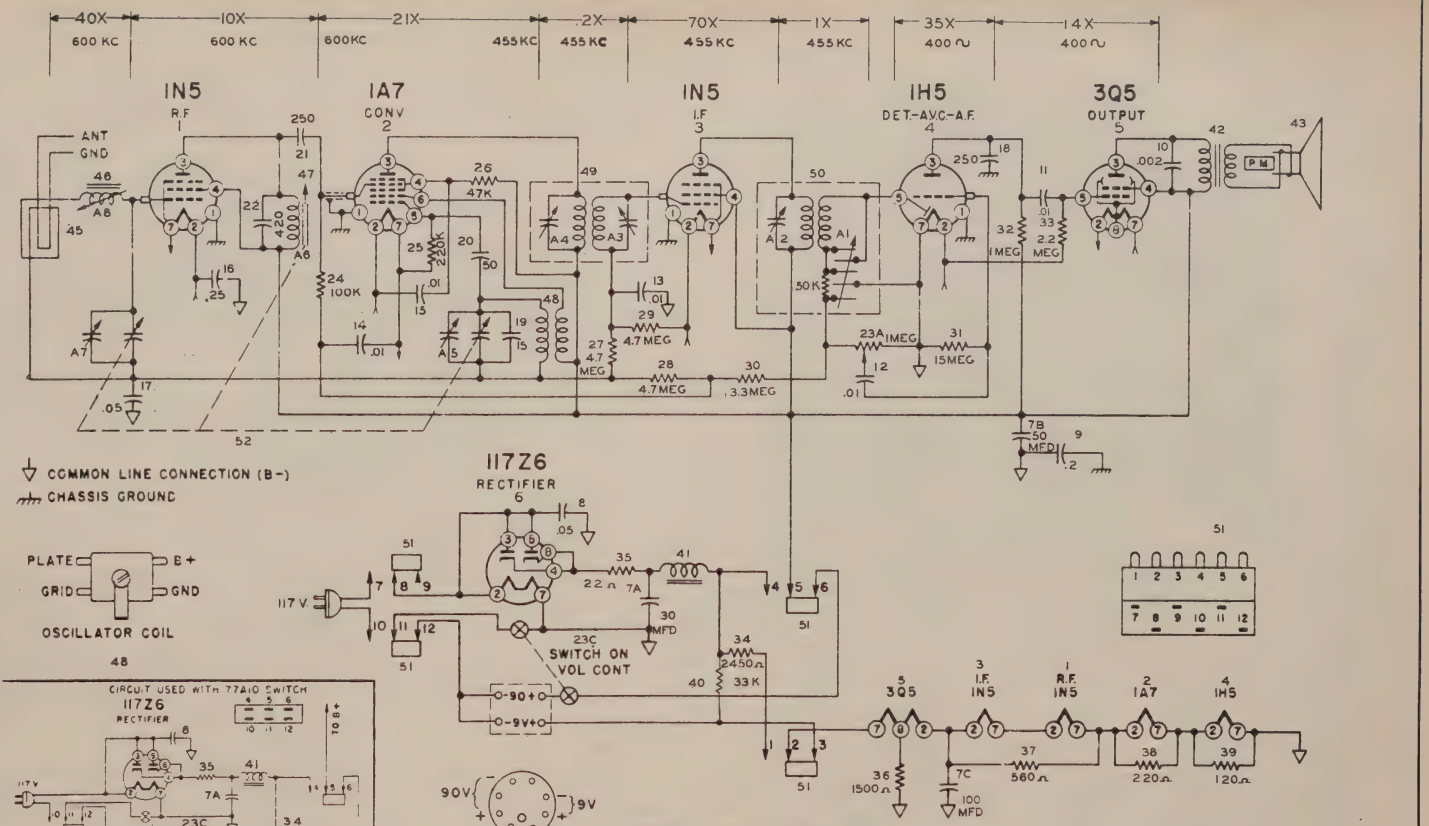
ITEM No.	PART NAME	MANTOLA PART No.	NOTES
51(A)	Switch	77A6	Power Change (R602)
51(B)	"	77A10	" " (R602N)
52	Tuning Cap.	66B4	2 Gang Variable Cap.
	Scale	23C14	Escutcheon and Dial
	Knob	33A14-6	Tuning
	"	33A14-5	Volume
	Plug	8MA3-3	Battery (2 prong)
	Pointer	25A15-1	Cream Tenite



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5GT	0V.	4.4V.DC	110V.DC	110V.DC	0V.	0V.	2.8V.DC	0V.	0V.
2	1A7GT	0V.	2.8V.DC	110V.DC	60VDC	0V.	110V.DC	1.4V.DC	0V.	0V.
3	1N5GT	0V.	5.8V.DC	110V.DC	110V.DC	0V.	2.9V.DC	4.4V.DC	0V.	0V.
4	1H5GT	0V.	1.4V.DC	65V.DC	0V.	0V.	0V.	0V.	0V.	0V.
5	3Q5	0V.	5.8V.DC	100V.DC	107V.DC	0V.	0V.	8.2VDC	7.0V.DC	
6	117Z6GT	0V.	117V.AC	117V.AC	127VDC	117VAC	0V.	0V.	127VDC	

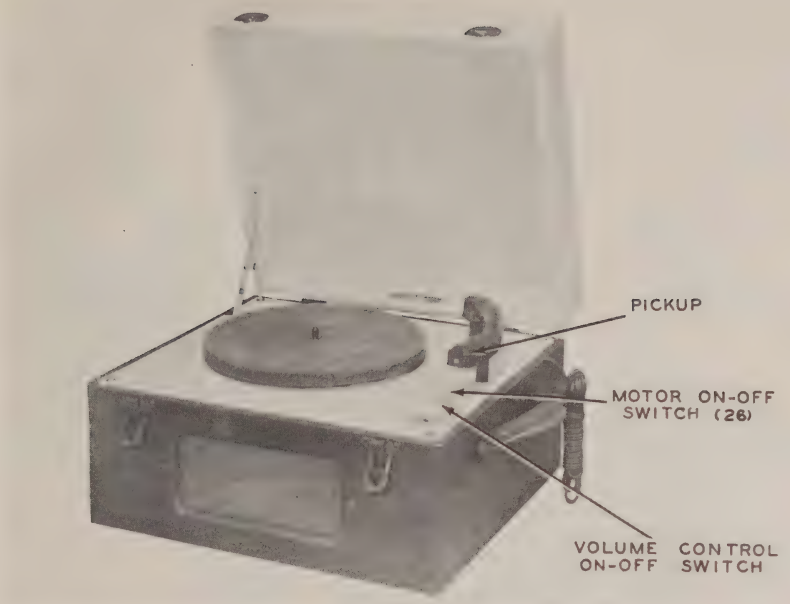
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5GT	INF	45Ω	2200Ω	2200Ω	INF	3.2MEG	33Ω	INF	INF
2	1A7GT	INF	33Ω	2200Ω	48KΩ	220KΩ	2200Ω	18Ω	3.2MEG	3MEG
3	1N5GT	INF	55Ω	2200Ω	2200Ω	12 MEG	33Ω	45Ω	INF	3.2MEG
4	1H5GT	INF	18Ω	1MEG	2.2MEG	1.1 MEG	0Ω	0Ω	INF	12 MEG
5	3Q5	INF	55Ω	2800Ω	2000Ω	2.2MEG	INF	69Ω	62Ω	
6	117Z6T	INF	250Ω	250Ω	2400Ω	250Ω	INF	0Ω	2400Ω	

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC shorted to B-.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE
MODEL 64BR-916A



AIRLINE
MODEL 64BR-916A

AIRLINE MODEL 64BR-916A

TRADE NAME Airline Model 64BR-916A
MANUFACTURER Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET AC Operated Record Player
TUBES (THREE) Types 12SQ7 Audio Amp., 50L6GT Power Output, 35Z5GT Rectifier.

POWER SUPPLY 105-125 Volts AC
RATING .235 Amps. @ 117V AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SQ7	0V.	-.05V.DC	.65V.DC	0V.	0V.	70V.DC	12.5V.AC	0V.
2	50L6GT	0V.	62V.AC	110V. DC	112V.DC	0V.	0V.	12.5V.AC	7.4V.DC
3	35Z5GT	0V.	117V.AC	110V.AC	0V.	117V.AC	0V.	83V.AC	125V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SQ7	INF	500K Ω	770 Ω	0 Ω	0 Ω	185K Ω	12 Ω	0 Ω
2	50L6GT	INF	56 Ω	35K Ω	35K Ω	490 K	INF	12 Ω	140 Ω
3	35Z5GT	INF	190 Ω	180 Ω	INF	190 Ω	INF	170 Ω	35 K Ω

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Audio Amp.	12SQ7	12SQ7	8Q	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150	BEA8C11119	FP214	DY-2x50-150	EL-25	AF88D	UP6BJ34	■ Filter
B	40	150							▲ "
5	.02	600	BEA8J4352	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
6	.05	600	BEA8J1995	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Coupling
7	.1	400	BEA8J909	TP428	S-4-1	TC-1	484-.1.	DT4P1	Line Isolating

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
8A	500KΩ	1	BE101230	MK401	D13-133	AM-60-2	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 8A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

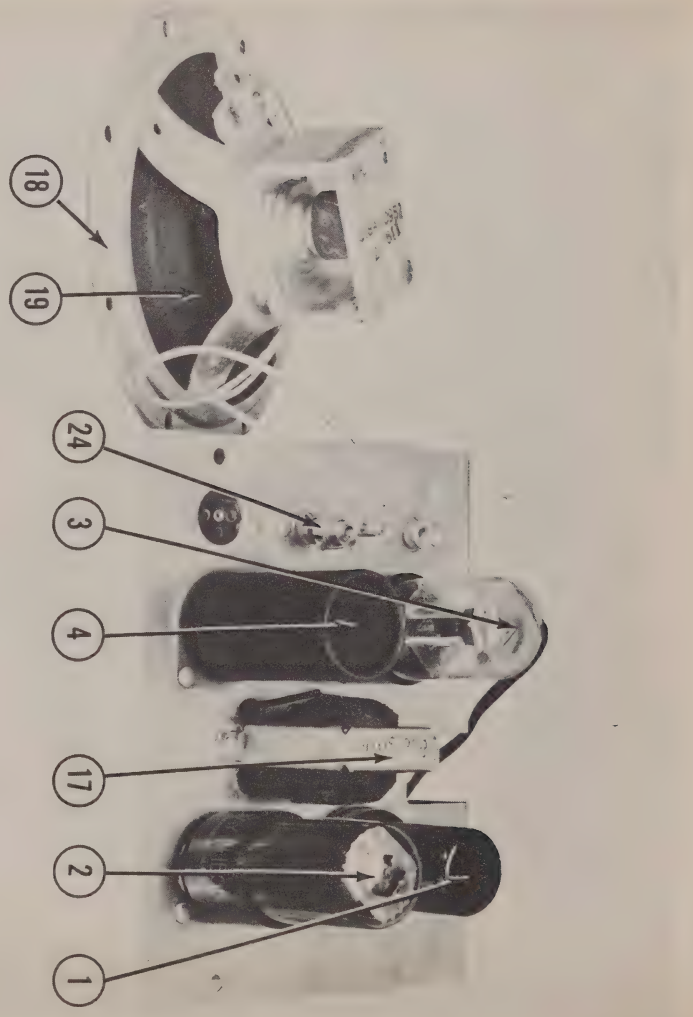
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
9	750Ω	½	BEC-9B1-6345	BTS-820	Vi.-Grn.-Br. 1st AF Cathode
10	150KΩ	½	BEC-9B1-88	BTS-150K	Br.-Grn.-Yl. 1st AF Plate Load
11	220KΩ	½	BEC-9B1-90	BTS-220K	Red-Red-Yl. Bleeder
12	470KΩ	½	BEC-9B1-94	BTS-470K	Yl.-Vi.-Yl. Output Grid
13	150Ω	½	BEC-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
14	120Ω	5	BEA-90-10925	AEA-150*	Line Dropping
15	2200Ω	½	BEC-9B1-66	BTS-220C	Red-Red-Red Filter
16	47Ω	½	BEC-9B1-46	BW-2-47	Yl.-Vi.-Blk. Surge Limiter

*Adjust tap to 120Ω

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
17	4000Ω	3.2Ω	270Ω	.66Ω	105128	A-3856†	T-13S39†		†Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
18	FM	3.45Ω	18A-10952	ST-106		
	CONE DIA.	VC DIA.				
19	5-3/4"	1/2"	NOT READILY	REPLACEABLE	-USE COMPLETE SPEAKER UNIT.	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
20	Socket	BE121280	Pickup Leads
21	"	BE121282	Speaker Leads
22	"	BEA-19B-10727	Motor Leads
23	Phono Plug	BE10724	
24	Speaker Plug	BE121285	
25	Motor Plug	BEA-19A-10947	
26	Switch	BEA-20C-5945	On-Off Motor
	Pickup Arm	BEC-48C-10954	Rest & Crystal Pickup (Shure P87B)
	Motor Assby.	BED-2H-10816-1	Motor & Turntable
	Knob	BE128660-9	
	Case	BE24D-10924	
	Grill Screen	BEB-2K-10943	

DISASSEMBLY INSTRUCTIONS

1 - Remove volume control push-on type knob.

2 - Remove 4 bolts from top cabinet board.

3 - Lift up cabinet board.

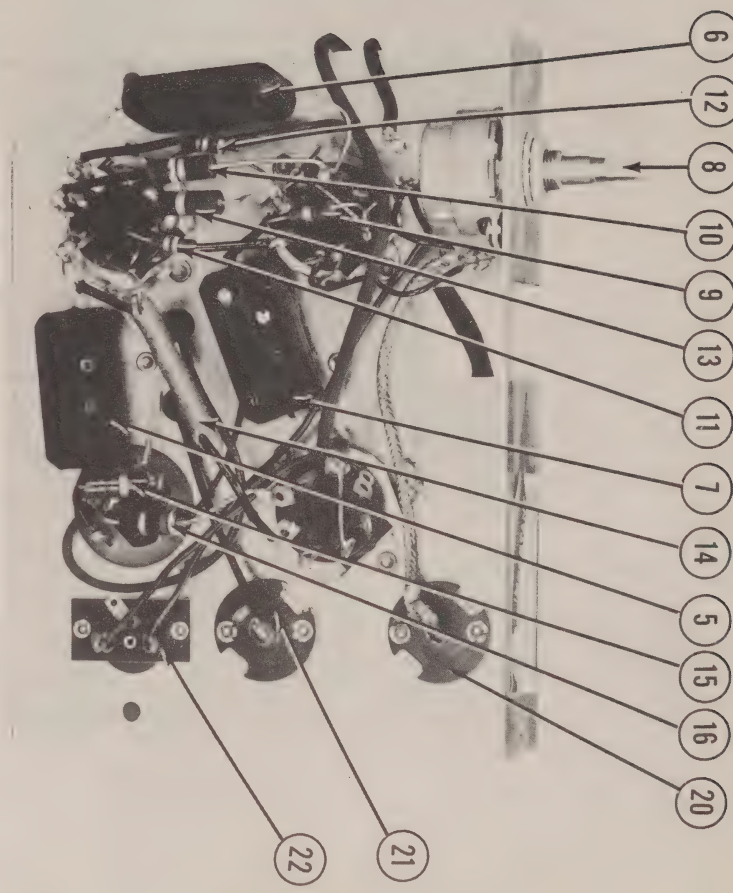
4 - Disconnect phono-motor plug and pick up plugs from amplifier chassis sockets.

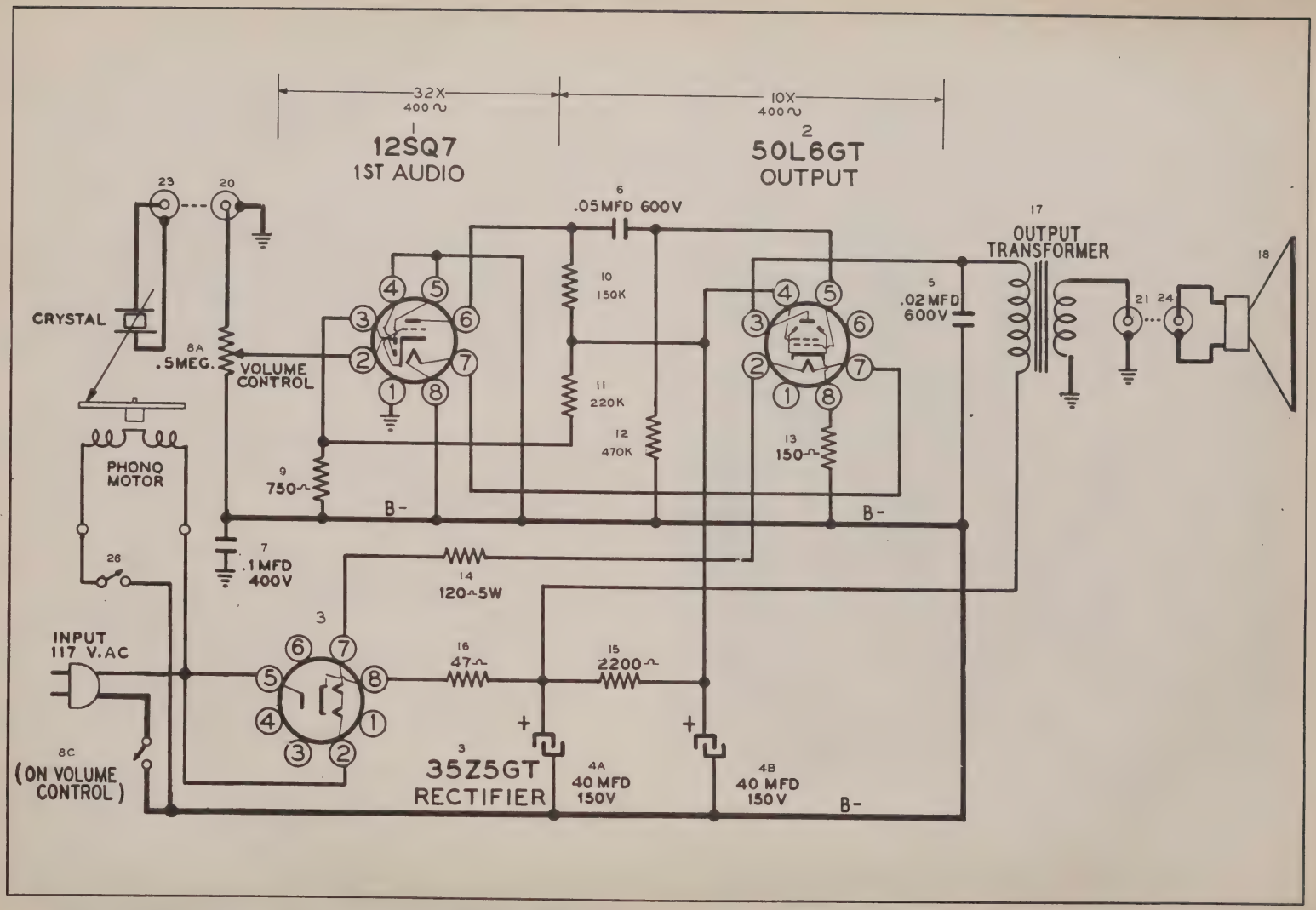
5 - Remove cabinet board.

6 - Remove chassis from cabinet (2 Phillips head screws; 1 wood screw).

7 - Remove speaker (4 wood screws and washers).

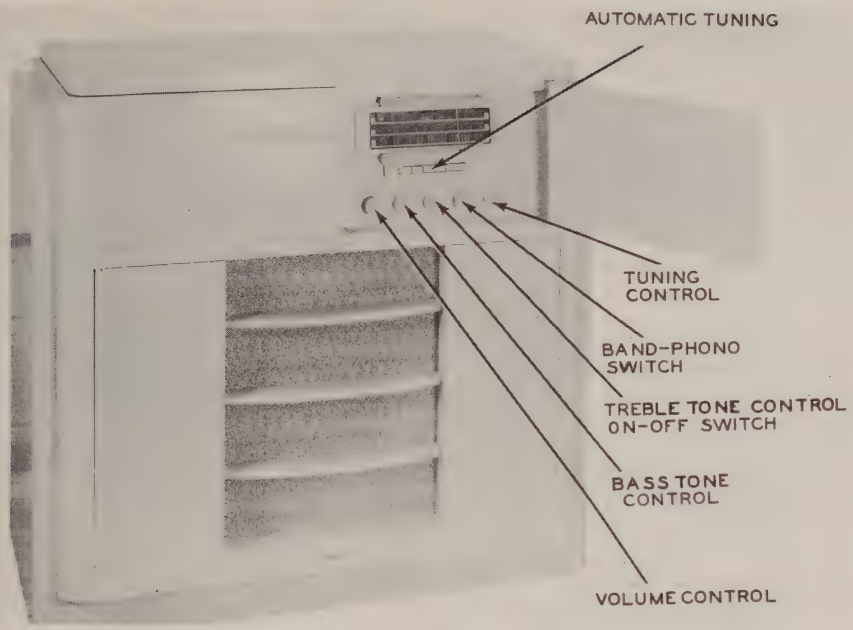
CHASSIS—BOTTOM VIEW





The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



HOFFMAN
MODEL A 501

HOFFMAN
MODEL A 501

HOFFMAN MODEL A501

TRADE NAME	Hoffman Model A501, Chassis No. 108ST
MANUFACTURER	Hoffman Radio Corp., 3430 South Hill Street, Los Angeles, California
TYPE SET	AC Operated Combination Radio & Automatic Phono. 3 Band Superheterodyne Radio With Self Contained Loop Antenna And Automatic Tuning.
TUBES (NINE)	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6J5 Tone Control 6J5 Phase Inv., 2-6V6GT Power Output, 5U4GT Rectifier.
POWER SUPPLY	117 Volts AC Rating - .750 Amps. @ 117V AC
TUNING RANGE—BROADCAST	550-1630KC SHORT WAVE 5.5-10.4MC, 9.5-19.4MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 6SA7. Low side to chassis.	455KC	BC Band "A"	Point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
200 MMFD	High side to ext. ant. jack. Low side to chassis.	1600KC	"	1600KC	"	A5	" " " "
"	"	1400KC	"	1400KC	"	A6,A7	" " " "
"	"	600KC	"	600KC	"	A8	Rock gang and adjust for maximum output.
"	"	"	"	"	"	A9	Adjust for maximum output. Repeat adjustments as given on A5, A6, A7, A8 and A9 for maximum until there is no further improvement.
400Ω carbon res.	"	8MC	SW Band "B"	8MC	"	A10	Adjust for maximum output.
"	"	"	"	"	"	A11,A12	" " " "
"	"	16MC	SW Band "C"	16MC	"	A13	" " " "
"	"	"	"	"	"	A14,A15	" " " "

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		HOFFMAN PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Tone Control	6J5	6J5	6Q	
6	Phase Inv.	6J5	6J5	6Q	
7	Power Output	6V6GT	6V6GT	7AC	
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5U4GT	5U4GT	5T	

CAPACITORS

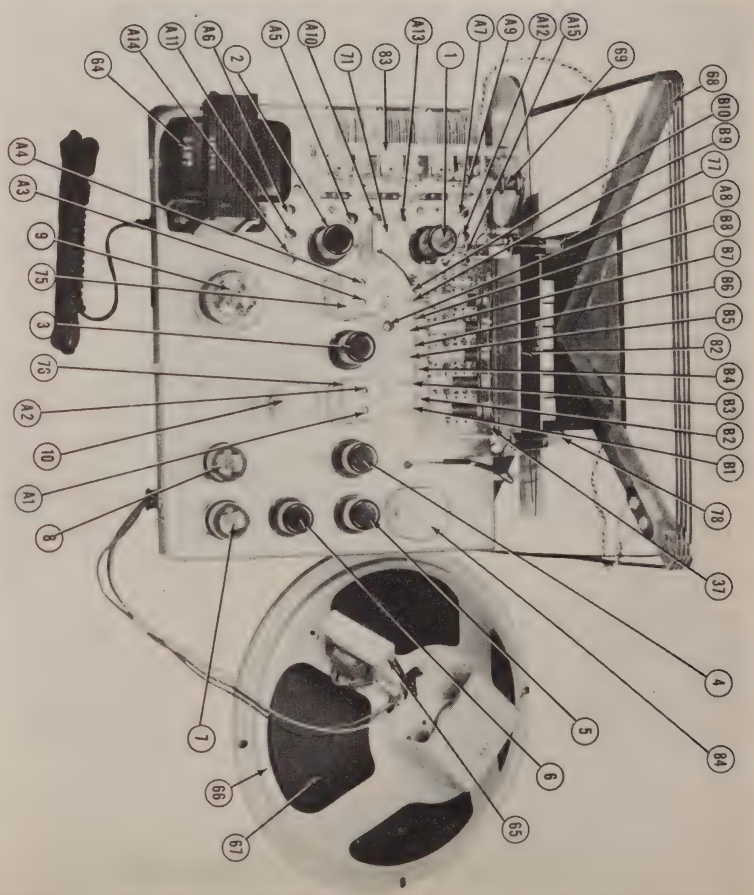
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	HOFFMAN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
10A	20	450	4200	FP339	DY-2x20-450/20-25	EL-350	AF44J4A	UP6BJ38	■ Filter
B	20	450							▲ "
C	20	25						BR202A	Cath. Bypass
11	10	450	4203	TC72	M-10-450	UT-12	PRS450-10	BR1045	Plate Decoupling
12	10	450	4203	TC72	M-10-450	UT-12	PRS450-10	BR1045	Screen Filter*
13	.01	600	4105	TP410	S-6-01	TC-11	684-.01	DT6S1	Line Bypass
14	.01	600	4103	TP410	S-6-01	TC-11	684-.01	DT6S1	6V6 Plate Bypass
15	.01	600	4103	TP410	S-6-01	TC-11	684-.01	DT6S1	" " "
16	.02	400	4106	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
17	.02	400	4106	TP423	S-4-02	TC-12	484-.02	DT4S2	" "
18	.01	400	4112	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
19	.01	400	4112	TP421	S-4-01	TC-11	484-.01	DT4S1	Tone Compensation
20	.5	200	4110	TP431	S-4-5	TC-5	484-.5	DT4P5	" "
21	.01	200	4112	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
22	.01	200	4112	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
23	.005	600	4102	TP408	S-6-005	TC-25	684-.005	DT6D5	" "
24	.05	400	4101	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
25	.05	400	4101	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Bypass Pwr. Supp.
26	.05	200	4100	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
27	.05	200	4100	TP426	S-4-05	TC-15	484-.05	DT4S5	" "
28	100	500	4000	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	6SQ7 Plate Bypass
29	100	500	4000	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
30	100	500	4000	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Vol. Cont.
31	650	500	4011		MO.5-36			1W5T6	Scratch Filter
32	330	500	4010	MC241	MO.5-33	1FM-335	1468-.0003	5W5T3	" "
33	330	500	4010	MC241	MO.5-33	1FM-335	1468-.0003	5W5T3	" "
34	47	500	4007	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.
35	1050	500	4005	MC255	MO.3-21	1FM-21	1468-.001	1W5D1	Fixed Pad
36	2300	500	4006	MC460	MW.5-22	1FM-23	1467-.003	1W5D25	" "
37	500	500	4004	MCB245	MOS.5-35	MS-35	1469-.0005	5R5T5	Fixed Pad PB

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	HOFFMAN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
38A	500KΩ	1	4804	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 38A per instructions
39A	250KΩ	1	4805	MR44	D13-130	M-64-Z	Treble Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 39A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
40A	50KΩ	1	4806	MR34	D14-123	M-44-S	Bass Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 40A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HOFFMAN PART No.	IRC PART No.	
41	100KΩ	½	4511	BTS-100K	Br.-Blk.-Yl. AVC Network
42	22KΩ	½	4501	BTS-22K	Red-Red-Or. Osc. Grid
43	2.2 Meg.	½	4502	BTS-2.2 Meg	Red-Red-Grn. AVC Network
44	10KΩ	3	4520	AB-10K	Br.-Blk.-Or. Screen Dropping
45	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Diode Load
46	47KΩ	½	4537	BTS-47K	Yl.-Vi.-Or. Scratch Filter
47	47KΩ	½	4537	BTS-47K	Yl.-Vi.-Or. " "
48	22KΩ	½	4538	BTS-22K	Red-Red-Or. " "
49	10 Meg.	½	4505	BTS-10 Meg.	Br.-Blk.-blue 1st AF Grid
50	220KΩ	½	4500	BTS-220K	Red-Red-Yl. 1st AF Plate Load
51	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. Tone Control Tube Grid
52	47KΩ	1	4516	BTS-47K	Yl.-Vi.-Or. Plate Dropping
53	2200Ω	½	4512	BTS-2200	Red-Red-Red Tone Control Tube Cathode
54	10KΩ	½	4515	BTS-10K	Br.-Blk.-Or. " " " "
55	10KΩ	½	4515	BTS-10K	Br.-Blk.-Or. " " " " Plate
56	1 Meg.	½	4513	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid
57	2200Ω	½	4512	BTS-2200	Red-Red-Red Phase Inverter Cathode Bias
58	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode Load
59	47KΩ	½	4504	BTS-47K	Yl.-Vi.-Or. Phase Inverter Plate
60	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Output Grid Load
61	470KΩ	½	4506	BTS-470K	Yl.-Vi.-Yl. Output Grid Load
62	220Ω	3	4519	AB-200	Red-Red-Br. Output Cathode
63	500Ω	20	4702	DG-500	Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	HOFFMAN PART No.	STANCOR PART No.	THORDARSON PART No.	
64	117VAC @ .750A	280-280 @ .065A	4.9VAC @ 3.15A	6.0VAC @ 3.25A	5001	P-6120‡	T-17R37†	‡ Use the universal mounting brackets provided with this unit. † Drill new mounting holes.

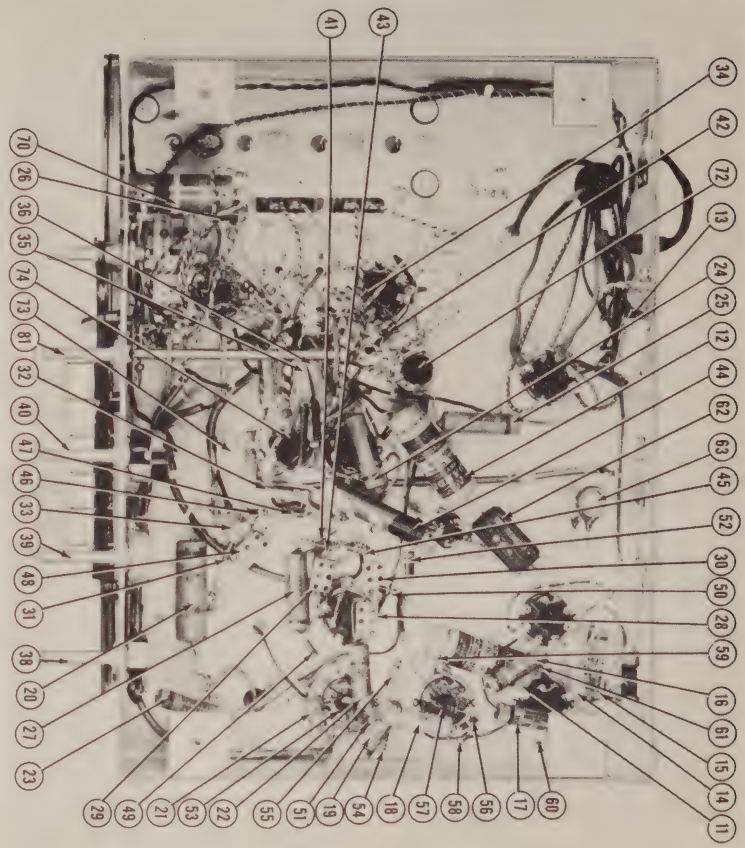
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HOFFMAN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
65	9000Ω	3.8Ω	430Ω	.74Ω	5107	A-2201	T-14885		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HOFFMAN PART No.	JENSEN PART No.		
	FIELD	VC IMP				
66	PM	3.8Ω	9280	ST-102		
	CONE DIA.	VC DIA.				
67	11½"	1"	NOT READILY REPLACEABLE - WILL CONSULT SPEAKER KIT			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

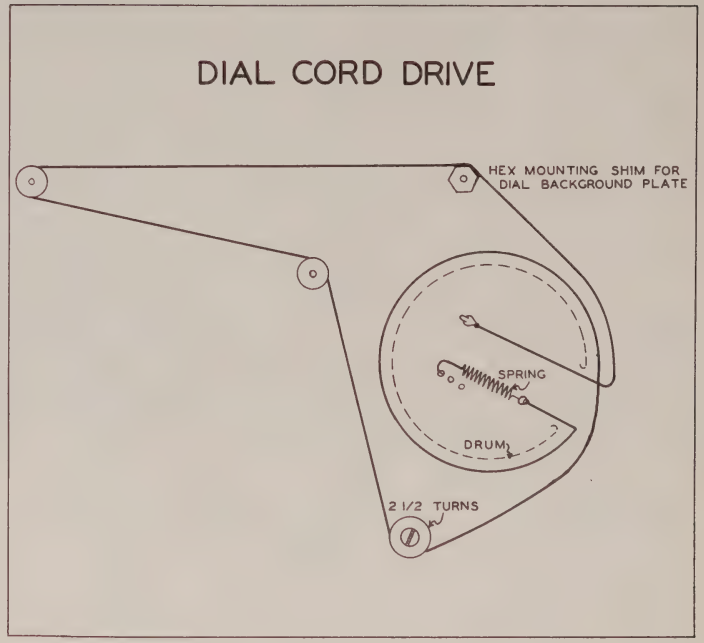
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
68	Loop Ant.	.5Ω		5221		
69	Band "A" Ant	4Ω	40Ω	5220		Primary Slug Adj.
70A	" "B" "	2Ω	.2Ω	5217		Wound on same form as Band "C"
70B	" "C" "	.1Ω	3Ω			
71	" "A" RF	1.5Ω	9.5Ω	5216		
72A	" "B" "	8Ω	2.5Ω	5219		Wound on same form as Band "C"
72B	" "C" "	.6Ω	3Ω			
73	" "A" Osc		5.6Ω	5215	14-1040	
74A	" "B" "		0Ω	5218		Wound on same form as Band "C"
74B	" "C" "		0Ω			
75	Input IF	13Ω	12Ω	5213	16-8682	
76	Output IF	13.5Ω	13Ω	5214	16-9850	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA HOFFMAN PART No.		INSTALLATION NOTES
77	Bayonet	6-8	0.25	Blue			Type 44 Dial Lamp
78	Bayonet	6-8	0.25	Blue			" " " "
79	Bayonet	6-8	0.25	Blue			" " Phono Lamp
80	Bayonet	6-8	0.25	Blue			" " Floor Lamp

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
81	Switch	6105	Band Change & Phono
82A	"	5004	Push Button (Auto. Tuning)
82B	Tuning Assy.	5820	Auto. Tuning
83	Tuning Cap.	4408	3 Gang Variable Cap.
84	Choke	81 X	Bass Boost
	Trimmer Assy.	4800	A7, A12, A16 Osc. Adjustments
	" "	4800	A5, A11, A13 Osc. "
	" "	4800	A6, A11, A14 RF "
A8	Padder	43 1	Band "A" Pad



DISASSEMBLY INSTRUCTIONS

1 - Remove the following push-on type knobs: volume control, tone controls (bass and treble), phono, tuning.

2 - Remove phono-plug from chassis.

3 - Remove phono-pickup jack from chassis.

4 - Remove speaker plug from chassis.

5 - Remove floor pilot light plug from chassis.

6 - Remove antenna plug-in jack from chassis.

7 - Remove white and black-blue-white leads from antenna loop (2 screws and 2 lock washers).

8 - Remove insulated staples holding above leads.

9 - Remove back board of right-hand record compartment.

10- Remove the four screws holding the chassis to the cabinet board. Remove chassis.

11- Remove the speaker by removing 4 nuts, 4 lock washers, and 4 flat washers.

12- Remove antenna loop by removing the 2 screws holding the antenna loop to the cabinet.

AUTOMATIC TUNING ADJUSTMENTS

The push-buttons and their associated adjustments from left to right (facing front of receiver) cover the following frequency ranges:

RANGE	CORRESPONDING ADJUSTMENTS OSC.	R.F.
(1) 540KC to 850KC	B1	B2
(2) 540KC to 850KC	B3	B4
(3) 800KC to 1400KC	B5	B6
(4) 800KC to 1400KC	B7	B8
(5) 1000KC to 1600KC	B9	B10
(6) MANUAL - USED TO DISENGAGE THE AUTOMATIC TUNING - TUNING IS THEN ACCOMPLISHED BY THE BY THE TUNING CONTROL		

1 - Turn receiver on and turn band switch to "Broadcast" position. Allow sufficient time for receiver to warm up. Push in "Manual" push-button.

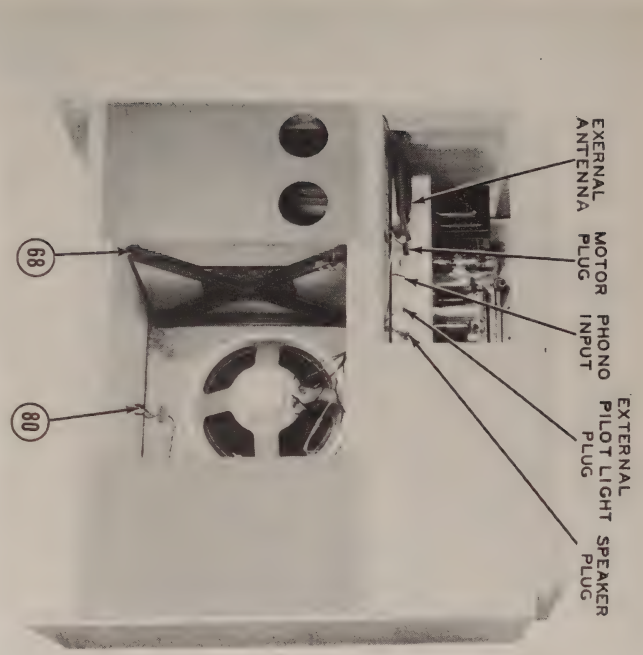
2 - Select a station between the frequency limits of 540KC to 850KC. Listen to the program so it may be identified.

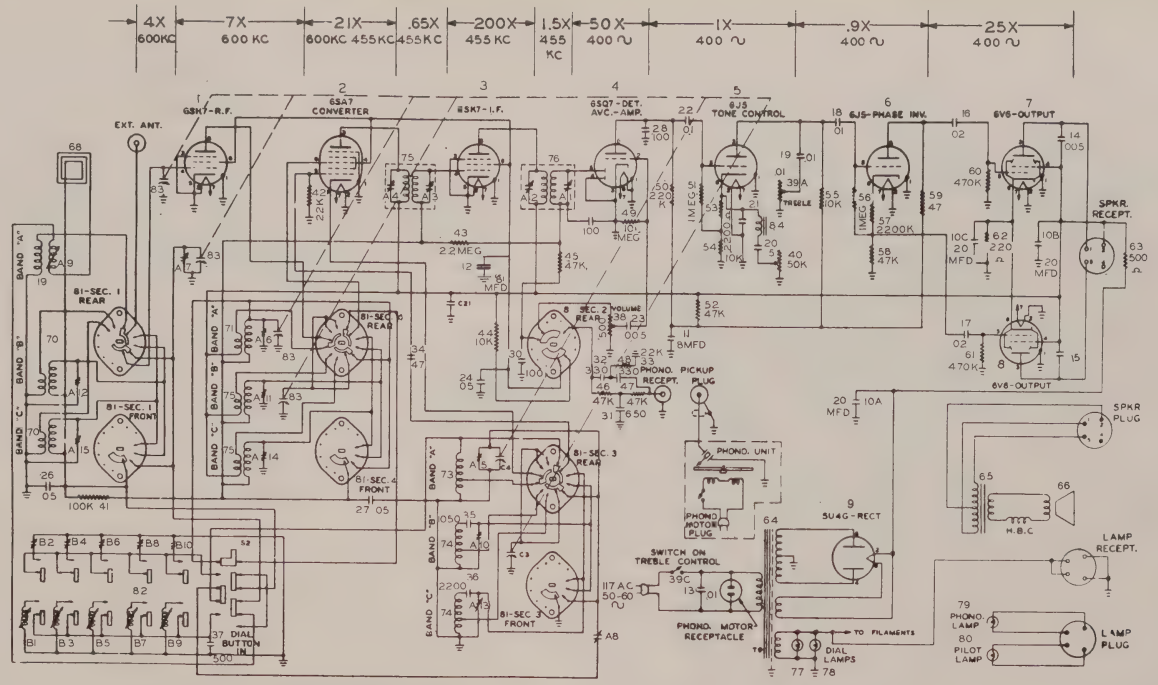
3 - Engage the push-button on the extreme left (#1) and adjust B1 to the station selected in step 2.

4 - Adjust B2 to maximum volume after B1 has been carefully adjusted

5 - Proceed in the same manner to set up the remaining push-buttons. Always select a station within tuning range of the push-button. B1, B3, B5, B7, B9 are used for tuning in the desired station and B2, B4, B6, B8, B10 are adjusted for maximum volume.

6 - These steps should be repeated to insure exact alignment of the automatic tuning system.





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-.17V.DC	0V.	95V.DC	6.2V.AC	275V.DC
2	6SA7	0V.	0V.	275V.DC	95V.DC	-4V.DC	0V.	6.2V.AC	-3V.DC
3	6SK7	0V.	0V.	0V.	-3V.DC	0V.	95V.DC	6.2V.AC	275V.DC
4	6SQ7	-47V.DC	0V.	-32V.DC	0V.	75V.DC	6.2V.AC	0V.	
5	6J5	0V.	0V.	120V.DC	23V.DC	-4V.DC	0V.	6.2V.AC	27V. DC
6	6J5	0V.	0V.	97V.DC	43V.DC	-4V. DC	0V.	6.2V.AC	45V.DC
7	6V6	0V.	0V.	270V.DC	275V.DC	0V.	0V.	6.2V.AC	15V. DC
8	6V6	0V.	0V.	270V.DC	275V.DC	0V.	0V.	6.2V.AC	15V. DC
9	5U4	0V.	330V.DC	6.2V.AC	320V.AC	0V.	320V.AC	0V.	330V.DC

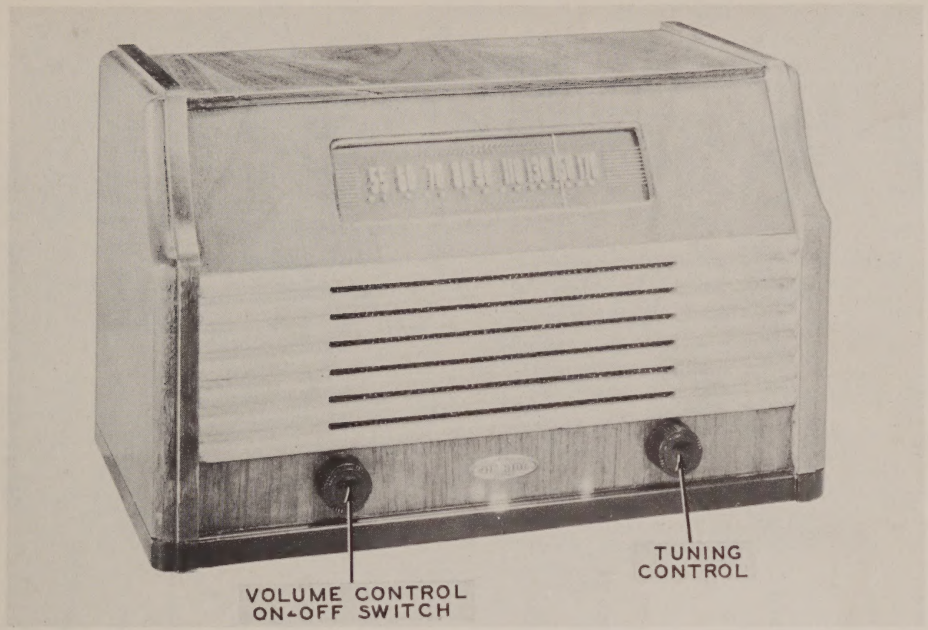
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	2.8MEG	0Ω	120KΩ	0Ω	110KΩ
2	6SA7	0Ω	0Ω	120KΩ	120KΩ	24KΩ	.5Ω	0Ω	2.8MEG
3	6SK7	0Ω	0Ω	0Ω	2.7MEG	0Ω	120KΩ	0Ω	110KΩ
4	6SQ7	0Ω	10 MEG	0Ω	540KΩ	0Ω	330KΩ	0Ω	0Ω
5	6J5	0Ω	0Ω	120KΩ	10KΩ	1MEG	250KΩ	0Ω	12KΩ
6	6J5	0Ω	0Ω	150KΩ	48KΩ	1MEG	INF	0Ω	50KΩ
7	6V6	0Ω	0Ω	110KΩ	110KΩ	470KΩ	INF	0Ω	190Ω
8	6V6	0Ω	0Ω	110KΩ	110KΩ	450KΩ	INF	0Ω	190Ω
9	5U4	INF	110KΩ	0Ω	70Ω	INF	76Ω	INF	110KΩ

VOLTAGE & RESISTANCE READINGS TAKEN IN "BROADCAST" POSITION

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



AIR KING
MODEL 4603

AIR KING
MODEL 4603

AIR KING MODEL 4603

TRADE NAME	Air King Model 4603
MANUFACTURER	Air King Products Co., Inc., 1523 63rd Street, Brooklyn 19, N.Y.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .230 Amps. @ 117 V AC
TUNING RANGE—BROADCAST	525-1740KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (grid) of 12SA7. Low side to chassis.	455KC	540KC	Across primary or secondary of output transformer	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, connect isolating capacitor in series with ground lead and decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1500KC	1500KC	"	A5,A6.	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. Repeat alignment for accuracy.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150		2N511	DHN-2x50-150	TA-440	PRS150-40-40	BRD4415	Filter - Red
(B)	40	150							" - Green
8	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.02	600		TP412	S-6-02	TC-12	684-.02	DT6S2	35L6 Plate Bypass
10	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.002	600		TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
12	.2	200		TP429	S-4-2	TC-2	484-.2	DT4P2	RF Bypass Pwr. Supp.
13	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.005	600		TP408	S-6-005	TC-25	684-.005	DT6D5	Ant. Coupling
15	100	500		MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
16	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
17	50	500		MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cap.
18	100	500		MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	500KΩ	1	2463	MR48		M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.		Not Req.	Attach to 19A per instructions
C	Switch		" "	M26		SW-A	" " " " "

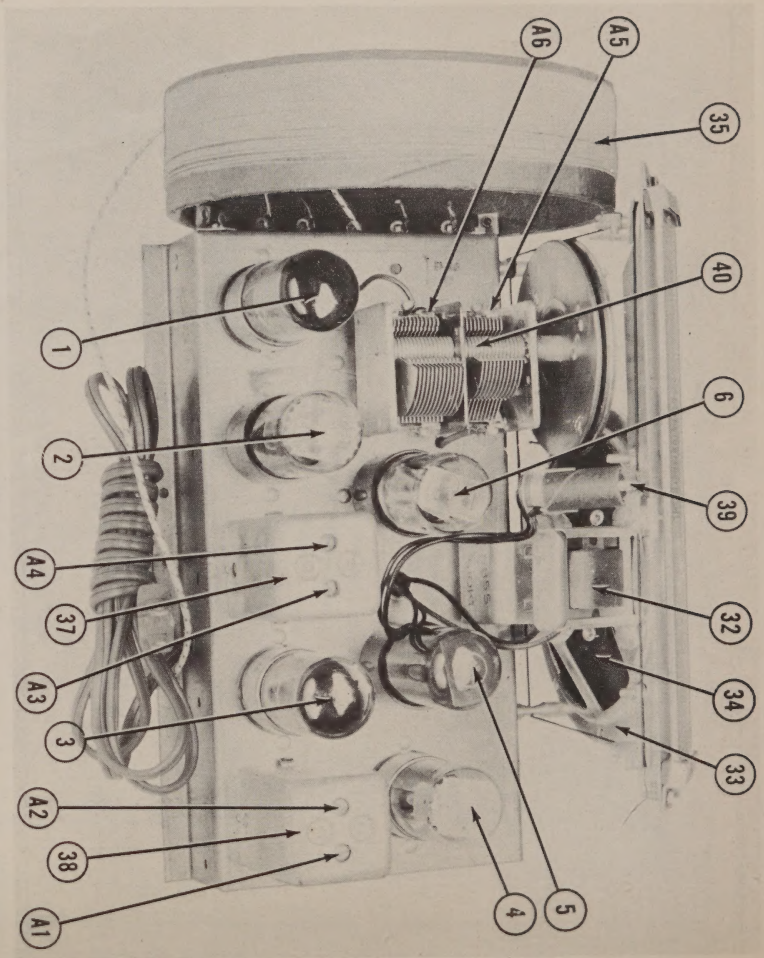
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	IRC PART No.	IDENTIFICATION CODES
20	220Ω	½		BW-½-220	Red-Red-Br. Pilot Light Shunt
21	1000Ω	½		BTS-1000	Br.-Blk.-Red Ant. Loading
22	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Load
23	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Conv. Grid Load
24	2 Meg.	½		BTS-2.2 Meg	Red-Blk.-Grn. AVC Network
25	24KΩ	½		BTS-22K	Red-Yl.-Or. Osc. Grid
26	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
27	300KΩ	½		BTS-270K	Or.-Blk.-Yl. 1st AF Plate Load
28	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
29	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
30	2200Ω	5		AB-2000	Red-Red-Red Filter
31	33Ω	1		BW-1-33	Or.-Or.-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
32	2550Ω	3.2Ω	255Ω	.7Ω		A-3876*	T-14882*		*Mount on chassis.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AIR KING PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
	FIELD	VC IMP.				
33	PM	3.2Ω		ST-105		
	CONE DIA.	VC DIA.				
34	4-1/2"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

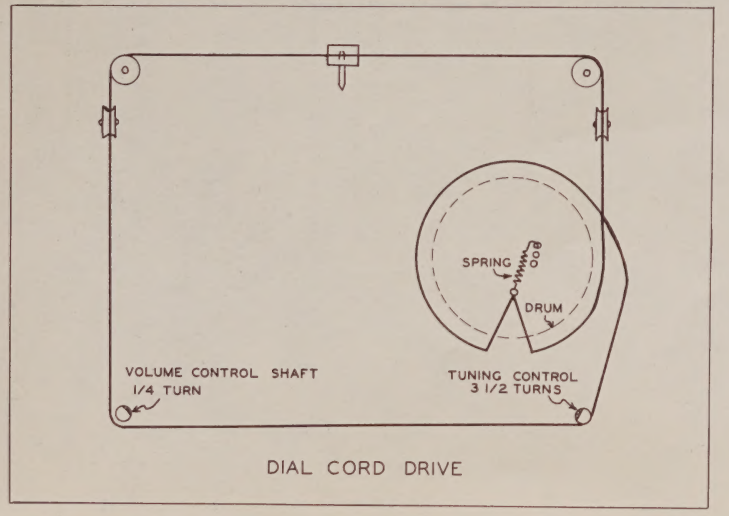
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIR KING PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
35	Loop Ant.	.1Ω	1.5Ω			
36	Osc. Coil		6.4Ω		14-1040	
37	Input IF	20Ω	20Ω	3329	16-3658	
38	Output IF	18.7Ω	18.9Ω	3529	16-3660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIR KING PART No.	REPLACEMENT DATA	INSTALLATION NOTES
39	Bayonet	6-8	0.15	Brown			Type 47

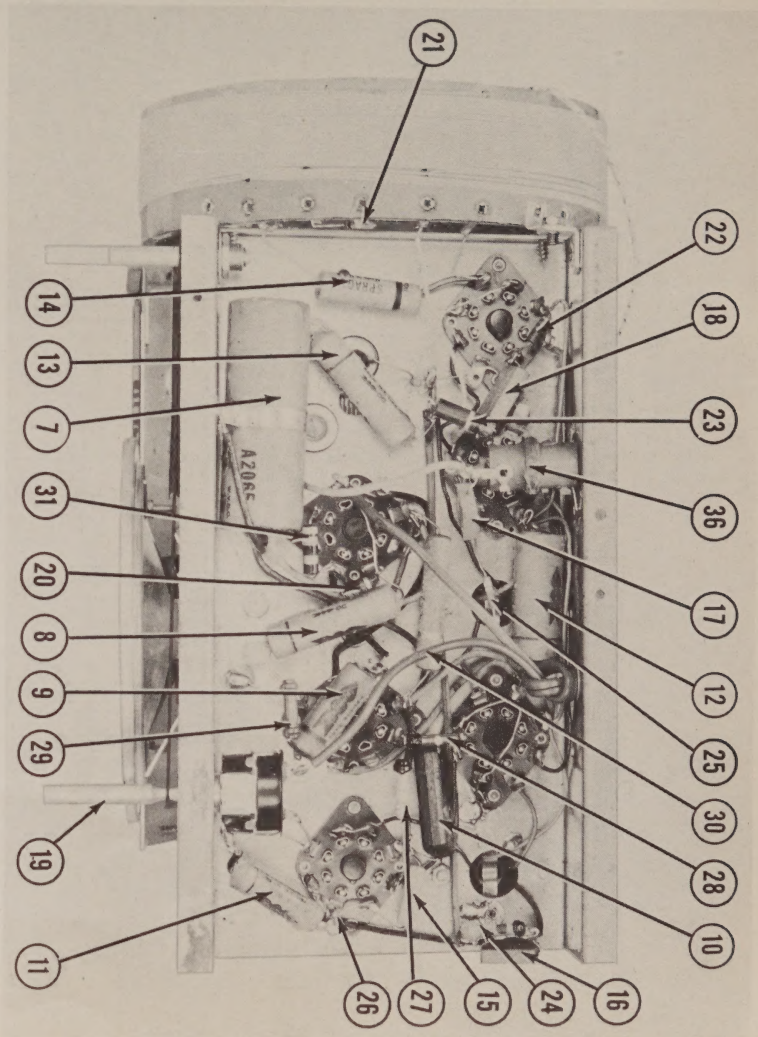
MISCELLANEOUS

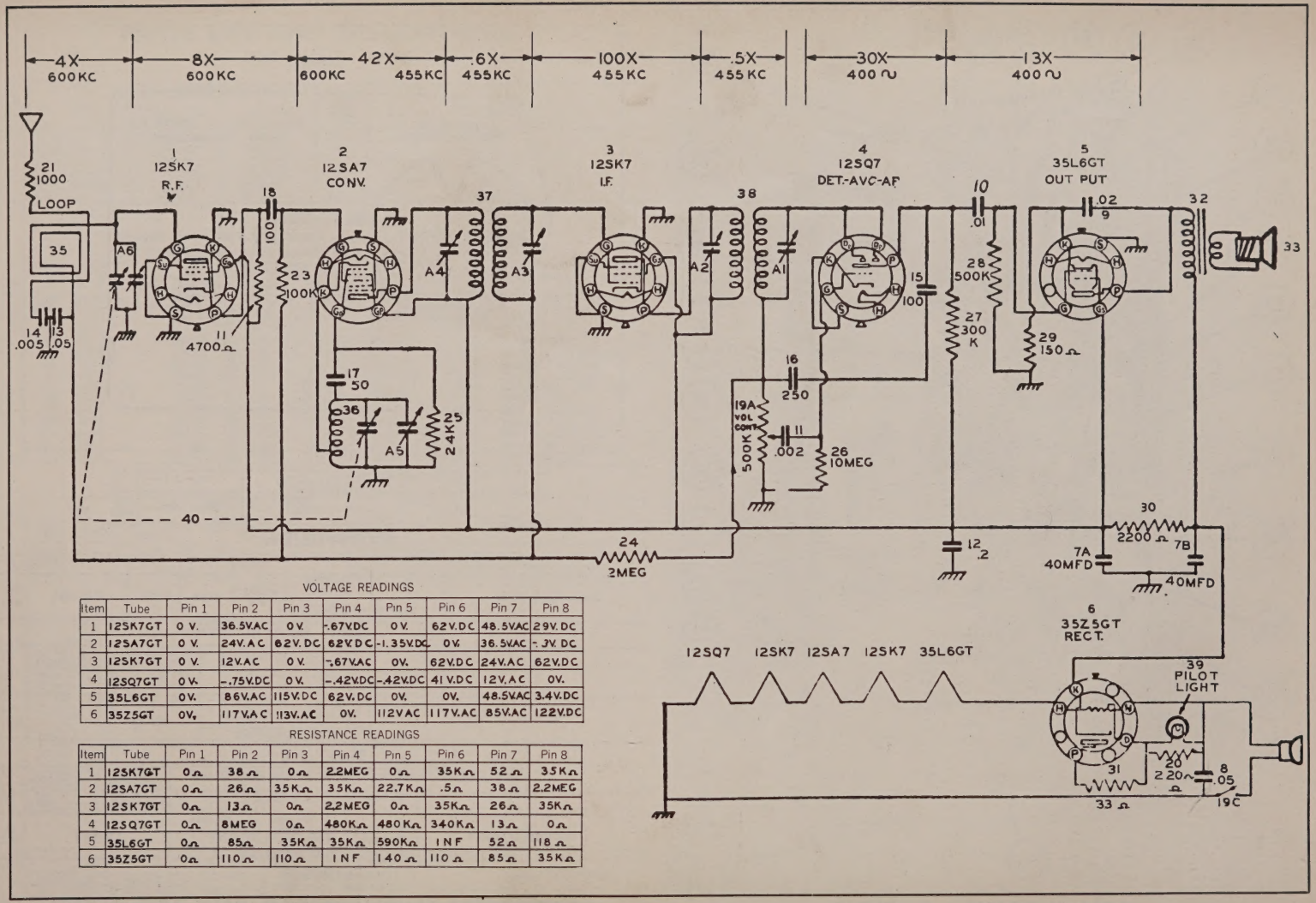
ITEM No.	PART NAME	AIR KING PART No.	NOTES
40	Tuning Cap.		2 Gang Variable Cap.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0 V.	36.5V.AC	0 V.	-.67VDC	0 V.	62V.DC	48.5V.AC	29V.DC
2	12SA7GT	0 V.	24V.A.C	62V. DC	62V.D.C.	-1.35V.DC.	0V.	36.5V.AC	-.3V. DC
3	12SK7GT	0 V.	12V.AC	0 V.	-.67V.AC	0V.	62V.DC	24V.AC	62V.DC
4	12SQ7GT	0 V.	-.75V.DC	0 V.	-.42V.DC	-.42V.DC	41 V.DC	12V.A.C	0V.
5	35L6GT	0V.	86V.AC	115V.DC	62V. DC	0V.	0V.	48.5V.AC	3.4V.DC
6	35Z5GT	0V.	117V.A.C	113V.AC	0V.	112V.AC	117V.AC	85V.AC	122V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0Ω	38Ω	0Ω	2.2MEG	0Ω	35KΩ	52Ω	35KΩ
2	12SA7GT	0Ω	26Ω	35KΩ	35KΩ	22.7KΩ	.5Ω	38Ω	2.2MEG
3	12SK7GT	0Ω	13Ω	0Ω	2.2MEG	0Ω	35KΩ	26Ω	35KΩ
4	12SQ7GT	0Ω	8MEG	0Ω	480KΩ	480KΩ	340KΩ	13Ω	0Ω
5	35L6GT	0Ω	85Ω	35KΩ	35KΩ	590KΩ	INF	52Ω	118Ω
6	35Z5GT	0Ω	110Ω	110Ω	INF	140Ω	110Ω	85Ω	35KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.